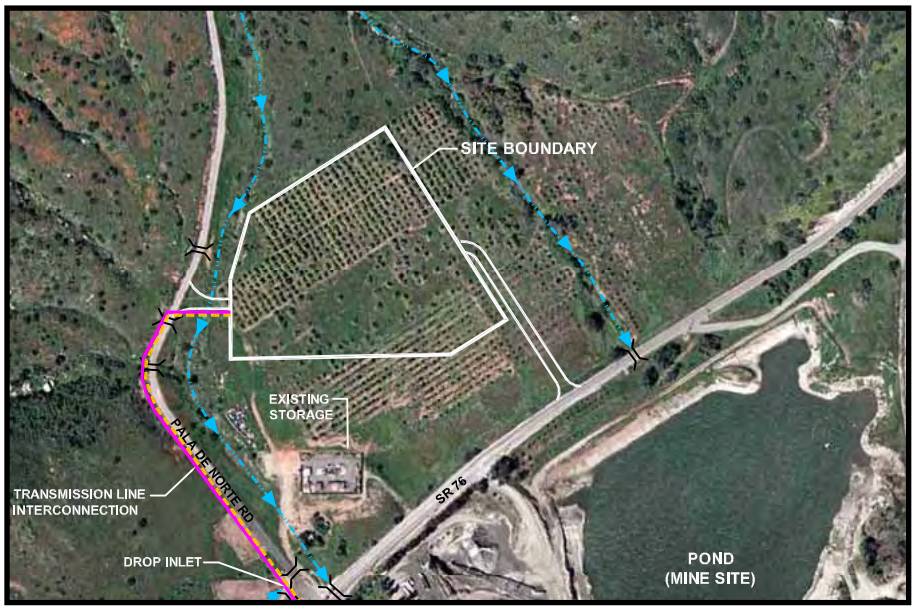
Staff Assessment

ORANGE GROVE PROJECT

Application For Certification (08-AFC-4)
San Diego County



CALIFORNIA ENERGY COMMISSION

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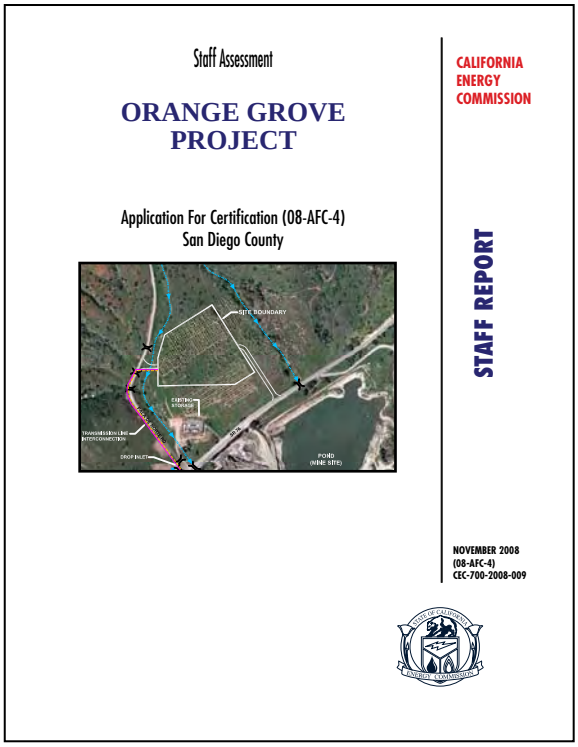

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ORANGE GROVE PROJECT
(08-AFC-4)
STAFF ASSESSMENT

EXECUTIVE SUMMARY 1

INTRODUCTION 2

PROJECT DESCRIPTION 3

ENVIRONMENTAL ASSESSMENT

- AIR QUALITY 4.1
- BIOLOGICAL RESOURCES 4.2
- CULTURAL RESOURCES 4.3
- HAZARDOUS MATERIALS 4.4
- LAND USE 4.5
- NOISE AND VIBRATION 4.6
- PUBLIC HEALTH 4.7
- SOCIOECONOMIC RESOURCES 4.8
- SOIL AND WATER RESOURCES 4.9
- TRAFFIC AND TRANSPORTATION 4.10
- TRANSMISSION LINE SAFETY AND NUISANCE 4.11
- VISUAL RESOURCES 4.12
- WASTE MANAGEMENT 4.13
- WORKER SAFETY 4.14

ENGINEERING ASSESSMENT

- FACILITY DESIGN 5.1
- GEOLOGY AND PALEONTOLOGY 5.2
- POWER PLANT EFFICIENCY 5.3
- POWER PLANT RELIABILITY 5.4
- TRANSMISSION SYSTEM ENGINEERING 5.5

ALTERNATIVES 6

GENERAL CONDITIONS 7

PREPARATION TEAM 8

EXECUTIVE SUMMARY

Testimony of Felicia Miller, Project Manager

INTRODUCTION

The Staff Assessment (SA) contains the California Energy Commission staff's independent analysis and final recommendations on the Orange Grove Project (OGP). The proposed project is under the Energy Commission's jurisdiction and cannot be constructed or operated without the Energy Commission's certification. This SA examines engineering, environmental, public health and safety aspects of the proposed project. The SA analysis is based on the information provided by the applicant and other sources available at the time the analysis was prepared and contains analyses similar to those normally contained in an Environmental Impact Report required by the California Environmental Quality Act. When issuing a certificate, the Energy Commission is the lead state agency under the California Environmental Quality Act and its process is functionally equivalent to the preparation of an Environmental Impact Report.

The Energy Commission staff has the responsibility to complete an independent assessment of the project's potential effects on the environment, the public's health and safety, and whether the project conforms to all applicable laws, ordinances, regulations and standards. The staff also recommends conditions of certification to mitigate potentially significant adverse environmental effects and conditions for construction, operation and eventual closure of the project if approved by the Energy Commission. This SA is not a decision document for these proceedings, nor does it contain findings by the Energy Commission; it is a staff recommendation related to environmental and public health and safety impacts and the project's compliance with local, state and federal laws, ordinances, regulations and standards.

The SA will serve as staff's testimony in evidentiary hearings to be held by a Committee of two Commissioners who are hearing this case. The Committee will hold evidentiary hearings and will consider the recommendations presented by staff, the applicant, government agencies, all parties and the public prior to proposing its decision. The Energy Commission will make findings and provide a final decision after the Committee's publication and consideration of comments on its Presiding Member's Proposed Decision.

The analyses contained in this SA are based upon information from: 1) the Application for Certification; 2) subsequent amendments; 3) workshops and site visits; 4) responses to data requests;5) additional information from federal, state and local agencies; 6) existing documents and publications; 7) independent research; and 8) public comments.

PROJECT LOCATION AND DESCRIPTION

The proposed OGP site is located on an 8.5-acre portion of an approximately 202-acre parcel, Assessor parcel No. 110-072-26, Section 32, Township 9S, Range 2W, San Bernardino B and M, in San Diego County. The site is located in an unincorporated area of northern San Diego County, approximately five miles east of the town of Fallbrook

and two miles west of the community of Pala. The site is located off State Route 76 (SR 76) approximately four miles from Interstate 15 (I-15). The proposed OGP is a 96-megawatt (MW) simple-cycle electric generating facility designed as a peaking facility to serve loads during peak demand. The power plant would use two combustion turbine generators (CTGs) that will be fueled with natural gas. High-efficiency emission control technologies will be provided to meet Best Available Control Technology (BACT) requirements. The CTGs will be equipped with power boost technology to increase output from the plant during warm or hot ambient temperature conditions. Demineralized, finely atomized water is injected into the compressor section of the engines, which reduces the heat of compression, and increases power output. The proposed project will utilize a packaged wet cooling tower for only the air inlet chiller system. Emissions will be controlled with a carbon monoxide (CO) emission oxidation catalyst, as well as an aqueous ammonia Selective Catalytic Reduction (SCR) system that will reduce emissions. Output of the generators would be connected to step-up transformers within an onsite switchyard that will require construction of an underground transmission circuit to be interconnected within the existing Pala substation. A more complete description of the project that includes site layout and regional maps is contained in the **PROJECT DESCRIPTION** section of this Staff Assessment.

PUBLIC AND AGENCY COORDINATION

Prior to the publication of the SA, the Energy Commission conducted a publicly noticed business meeting at which it accepted the OGP Application for Certification as complete and allowed comments on the proposed project. Staff sent notices informing property owners, libraries and agencies of the proposed project and sent copies of the Application for Certification to libraries, agencies and organizations. The Committee of two Commissioners assigned to oversee the OGP proceeding conducted an Informational Hearing, Issues Identification and Scheduling Conference on July 29, 2008 in Fallbrook, CA.

Staff conducted a publicly noticed Data Response and Issue Resolution Workshop in Fallbrook on September 11, 2008. The workshop allowed staff and the applicant to discuss data requests, data responses, and resolve issues. Additionally, the workshop provided opportunities to hear opinions on the project and the proceeding from intervenors, interested agencies, and members of the public. Staff also has coordinated directly with relevant local, state and federal agencies; such as the San Diego County Local Area Formation Commission (LAFCO), San Diego County Office of Planning and Land Use, North County Fire Protection District, California Department of Fish and Game, U.S. Fish and Wildlife Service, US Army Corp of Engineers, Fallbrook Public Utilities District, Rainbow Municipal Water District, California Department of Transportation, District 9, San Diego Regional Water Quality Control Board, San Diego Air Pollution Control District, Native American tribes and other interested parties.

ENVIRONMENTAL JUSTICE

The steps recommended by the U.S. EPA's guidance documents to assure compliance with the Executive Order 12898 regarding environmental justice are: (1) outreach and involvement; (2) a screening-level analysis to determine the existence of a minority or low-income population; and (3) if warranted, a detailed examination of the distribution of

impacts on segments of the population. Though the Federal Executive Order and guidance are not binding on the Energy Commission, staff finds these recommendations helpful for implementing its environmental justice analysis. Staff has followed each of the above steps for the following 11 sections in the PSA: Air Quality, Hazardous Materials, Land Use, Noise, Public Health, Socioeconomics, Soils and Water, Traffic and Transportation, Transmission Line Safety/Nuisance, Visual Resources, and Waste Management. Over the course of the analysis for each of the 11 areas, staff considered potential impacts and mitigation measures, significance, and whether there would be a disproportionate impact on an environmental justice population.

The purpose of staff's environmental justice screening analysis is to determine whether a low-income and/or minority population exists within the potentially affected area of the proposed site. Staff conducted the screening analysis in accordance with the "Final Guidance for Incorporating Environmental Justice Concerns in USEPA's National Environmental Protection Act Compliance Analysis" (Guidance Document) dated April 1998. People of color populations, as defined by this Guidance Document, are identified where either:

- the minority population of the affected area is greater than 50% of the affected area's general population; or
- the minority population percentage of the area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis.

Staff has reviewed Year 2000 U.S. Census block data for the proposed project site which indicates a minority population of 31% and 13% low-income which does not exceed staff's screening threshold of greater than 50% within a six-mile radius of the proposed project site (**See Socioeconomics Figure 1**). Staff has determined that there are no threshold level concentrations of minority and low income populations within the six-mile radius of the project. Therefore, staff has concluded that the project does not result in any significant unmitigated impacts to an environmental justice population.

STAFF'S ASSESSMENT

Each technical area section of the Staff Assessment contains a discussion of impacts, and where appropriate, mitigation measures and conditions of certification. The Staff Assessment includes staff's assessments of:

- the environmental setting of the proposal;
- impacts on public health and safety, and measures proposed to mitigate these impacts;
- environmental impacts, and measures proposed to mitigate these impacts;
- the engineering design of the proposed facility, and engineering measures proposed to ensure the project can be constructed and operated safely and reliably;
- project alternatives;

- compliance of the project with applicable laws, ordinances, regulations and standards during construction and operation;
- proposed conditions of certification; and
- project closure.

OVERVIEW OF STAFF'S CONCLUSIONS

Staff's final analysis indicates that the project's impacts in all areas would be mitigated to levels that are less than significant. Staff believes that as currently proposed, including the applicant's and the staff's proposed mitigation measures and the staff's proposed conditions of certification, the Orange Grove Project does comply with all applicable laws, ordinances, regulations, and standards (LORS).

Technical Sections Status Table

Technical Discipline	Impacts Mitigated	Complies with LORS
Air Quality	x	x
Alternatives	X	x
Biological Resources	x	x
Cultural Resources	x	x
Efficiency	x	x
Facility Design	x	x
Geology, and Paleontological Resources	x	x
Hazardous Materials	x	x
Land Use	x	x
Noise and Vibration	x	x
Public Health	x	x
Reliability	x	x
Socioeconomics	x	x
Soil and Water Resources	x	x
Traffic and Transportation	x	x
Transmission Line Safety/Nuisance	x	x
Transmission System Engineering	x	x
Visual Resources	x	x
Waste Management	x	x
Worker Safety/Fire Protection	x	x

CONCLUSIONS

The SA is staff's testimony for the OGP, and as such, is part of the overall project discovery process and suggests resolution of issues identified in this document. Each technical area assessment in the SA includes a discussion of the project and the existing environmental setting; the project's conformance with laws, ordinances, regulations and standards (LORS); whether the facility can be constructed and operated safely and reliably; project specific direct and cumulative impacts; the environmental consequences of the project using the proposed mitigation measures; conclusions and recommendations; and any proposed conditions of certification under which the project should be constructed and operated, should it be approved.

The suggested resolution of the issues discussed in this document are a result of workshops, agreements between the applicant and appropriate agencies, comments received by involved parties and staff's professional opinions.

Staff's analysis indicates that OGP can be built with no significant unmitigated impacts, and is in conformance with all Laws, Ordinances, Regulations and Standards.

INTRODUCTION

Felicia Miller, Project Manager

PURPOSE OF THIS REPORT

The Staff Assessment (SA) presents the California Energy Commission (Energy Commission) staff's independent analysis of the Orange Grove Energy, LP (OGE or Applicant) Application for Certification (AFC). The SA is a staff document. It is neither a Committee document nor a draft Energy Commission decision. The Committee is comprised of two commissioners who have been assigned to the project to oversee the progress of the case. The SA describes the following:

- the proposed project;
- the existing environmental setting;
- whether the facilities can be constructed and operated safely and reliably in accordance with applicable laws, ordinances, regulations, and standards (LORS);
- the efficiency and design of the proposed technology;
- the environmental consequences of the project, including potential public health and safety impacts;
- a cumulative analysis of the potential impacts of the project, along with potential impacts from other existing and known planned developments;
- mitigation measures proposed by the Applicant, staff, interested agencies, and intervenors that may lessen or eliminate potential impacts;
- the proposed conditions under which the project should be constructed and operated, if it is certified;
- project alternatives; and
- the requirements for project closure.

The analyses contained in this SA are based upon information from the AFC, supplemental information from the applicant, responses to data requests, comments and recommendations from local and state agencies, existing documents and publications, and independent field studies and research. The analyses for most technical areas include discussions of proposed conditions of certification. Each proposed condition of certification is followed by a proposed means of verification. The verification is not part of the proposed condition, but is the Energy Commission Compliance Unit's method of ensuring post-certification compliance with adopted requirements. The SA presents conclusions and proposed conditions of certification that apply to the design, construction, operation, and closure of the proposed facility.

The Energy Commission staff's analyses were prepared in accordance with Public Resources Code section 25500 et seq., Title 20, California Code of Regulation section 1701 et seq., and the California Environmental Quality Act (CEQA) Public Resources Code section 21000 et seq.

ORGANIZATION OF THE STAFF ASSESSMENT

The SA contains an Executive Summary, Introduction, Project Description, Project Analysis, and Project Alternatives. The environmental, engineering, and public health and safety analysis of the proposed project is contained in a discussion of 19 technical areas. Each technical area is addressed in a separate chapter: air quality, biological resources, cultural resources, geological and paleontological resources, hazardous material management, land use, noise and vibration, public health, socioeconomics, soil and water resources, worker safety and fire protection, transmission line safety, waste management, traffic and transportation, visual resources, facility design, power plant reliability, power plant efficiency, and transmission system engineering. A discussion of facility closure, project construction and operation compliance monitoring plans, and a list of staff that assisted in preparing this report follow the chapters.

Each of the 19 technical area assessments includes a discussion of:

- laws, ordinances, regulations, and standards;
- the regional and site-specific setting;
- project-specific and cumulative impacts;
- mitigation measures;
- closure requirements;
- conclusions and recommendations; and
- conditions of certification for both construction and operation (if applicable).

ENERGY COMMISSION SITING PROCESS

The Energy Commission has the exclusive authority to certify the construction and operation of thermal electric power plants 50 megawatts (MW) or larger. The Energy Commission certification is in lieu of any permit required by state, regional, or local agencies and federal agencies to the extent permitted by federal law (Pub. Resources Code, §25500). The Energy Commission must review power plant AFCs to assess potential environmental impacts including potential impacts to public health and safety, potential measures to mitigate those impacts (Pub. Resources Code, §25519), and compliance with applicable governmental laws or standards (Pub. Resources Code, §25523 [d]).

The Energy Commission's siting regulations require staff to independently review the AFC and assess whether the list of environmental impacts contained is complete and whether additional or more effective mitigation measures are necessary, feasible, and available (Cal. Code Regs., tit. 20, §§1742 and 1742.5[a]). Staff's independent review shall be presented in a report (Cal. Code Regs., tit. 20, §1742.5).

In addition, staff must assess the completeness and adequacy of the health and safety standards and the reliability of power plant operations (Cal. Code Regs., tit. 20,

§1743[b]). Staff is required to coordinate with other agencies to ensure that applicable laws, ordinances, regulations, and standards are met (Cal. Code Regs., tit. 20, §1744[b]).

Staff conducts its environmental analysis in accordance with the requirements of the California Environmental Quality Act. No Environmental Impact Report (EIR) is required because the Energy Commission's site certification program has been certified by the Resources Agency (Pub. Resources Code, §21080.5 and Cal. Code Regs., tit.14, §15251 [k]). The Energy Commission acts in the role of the CEQA lead agency and is subject to all other portions of CEQA.

Staff typically prepares both a preliminary and final staff assessment. However, to adhere to agreed upon timelines for this project, staff will prepare a SA only. The SA presents for the Applicant, intervenors, agencies, other interested parties, and members of the public, the staff's final analysis, conclusions, and recommendations.

Staff uses the SA to resolve issues between the parties and to narrow the scope of any adjudicated issues in the evidentiary hearings. After publication of the SA, staff will conduct a workshop to discuss its findings, proposed mitigation, and proposed compliance monitoring requirements. Based on the workshop and written comments, staff will submit final conditions of certification to reflect areas where the parties have reached agreement in a joint stipulation document.

The staff's SA is only one piece of evidence that the Committee will consider in reaching a decision on whether or not to recommend that the full Energy Commission approve the proposed project. At the public hearings, all parties will be afforded an opportunity to present evidence and to rebut the testimony of other parties, thereby creating a hearing record on which a decision on the project can be based. The hearing before the Committee also allows all parties to argue their positions on disputed matters, if any, and provides a forum for the Committee to receive comments from the public and other governmental agencies.

Following the hearings, the Committee's recommendation to the full Energy Commission on whether or not to approve the proposed project will be contained in a document entitled the Presiding Members' Proposed Decision (PMPD). Following publication, the PMPD is circulated for a minimum of 30 days in order to receive written public comments. At the conclusion of the comment period, the Committee may prepare a revised PMPD. A revised PMPD must undergo a 15-day comment period. At the close of the comment period for the revised PMPD, the PMPD is submitted to the full Energy Commission for a decision. Within 30 days of the Energy Commission decision, any party may request the Energy Commission to reconsider the decision.

A Compliance Monitoring Plan and General Conditions will be assembled from conditions contained in the SA and other evidence presented at the hearings. The Compliance Monitoring Plan and General Conditions will be presented in the PMPD. The Energy Commission staff's implementation of the plan ensures that a certified

facility is constructed, operated, and closed in compliance with the conditions adopted by the Energy Commission. Staff's proposed Compliance Monitoring Plan and General Conditions are included at the end of this PSA.

AGENCY COORDINATION

As noted above, the Energy Commission's certification is in lieu of any permit required by state, regional, or local agencies and federal agencies to the extent permitted by federal law (Pub. Resources Code § 25500). However, the Energy Commission typically seeks comments from and works closely with other regulatory agencies that administer laws, ordinances, regulations, and standards that may be applicable to proposed projects. These agencies include the U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, State Water Resources Control Board/Regional Water Quality Control Board, California Department of Fish and Game, and California Air Resources Board. Additionally, the Energy Commission works closely with local air and water districts and building and planning departments to include local government officials.

PROJECT DESCRIPTION

Felicia Miller, Project Manager

INTRODUCTION

On June 19, 2008, Orange Grove Energy, LP (OGE or Applicant), filed an Application for Certification (AFC) seeking approval from the California Energy Commission (Energy Commission) to develop the Orange Grove Project (OGP). On July 9, 2008, the Energy Commission accepted the AFC as complete, thus starting the Energy Commissions' formal review of the proposed project.

PURPOSE OF PROJECT

The OGP is in response to a San Diego Gas & Electric (SDG&E) "Request for Offer" for peaking power to serve loads during high electricity peak demand periods. The project site is owned by SDG&E and will be available to the applicant for the purpose of building and operating the project, if the Energy Commission approves the project, through a 25-year tolling agreement that allows SDG&E to provide natural gas to the project, and utilize 100% of the proposed plant electrical output.

PROJECT LOCATION

The proposed OGP would be constructed on an approximately 8.5-acre site that is part of an approximately 202-acre property. The site is located in an unincorporated area of northern San Diego County, approximately five miles east of the town of Fallbrook and two miles west of the community of Pala. The site is located off State Route 76 (SR 76) approximately four miles from Interstate 15 (I 15). (**Project Description Figure 1)** The region is primarily rural, with some agriculture dispersed around open space. Low density residential and small communities are also found within the region. In close proximity to the project site, a future land fill is planned as well as an expansion to an existing hotel and casino.

The transmission line interconnection will be entirely within the SDG&E property and will be constructed and owned by OGE between the site and the substation boundary. OGE will obtain a 20-foot-wide easement from SDG&E for the underground transmission line between the site and the existing Pala substation.

The site does not have any undisturbed natural habitat. The majority of the site has been used for agriculture and is occupied by a former citrus grove. Adjacent and south of the site, across the SR 76, is a former aggregate mine within the San Luis Rey River bed, where ground water intercepts the mine pits forming ponds. The mine pits are owned by a local tribe, which has no plans for further development of the site.

POWER PLANT EQUIPMENT AND LINEAR FACILITIES

The proposed OGP is a 96-megawatt (MW) simple-cycle electric generating facility designed as a peaking facility to serve loads during peak demand. The power plant

would use two combustion turbine generators (CTGs) that will be fueled with natural gas. High-efficiency emission control technologies will be provided to meet Best Available Control Technology (BACT) requirements. The CTGs will be equipped with power boost technology to increase output from the plant during warm or hot ambient temperature conditions. Demineralized, finely atomized water is injected into the compressor section of the engines, which reduces the heat of compression, and increases power output. The proposed project will utilize a packaged wet cooling tower for only the air inlet chiller system. Emissions will be controlled with a carbon monoxide (CO) emission oxidation catalyst, as well as an aqueous ammonia Selective Catalytic Reduction (SCR) system that will reduce emissions. Noise control features will include sound walls that will be constructed around the combustion turbines, the inlet chiller and cooling tower, and the fuel gas compressors to control noise from the plant. Output of the generators would be connected to step-up transformers within an onsite switchyard that will require construction of an underground transmission circuit, to be interconnected at the existing Pala substation.

The following are the major components of the power plant:

- two General Electric (GE) LM6000 PC SPRINT combustion turbine generators (CTGs) equipped with GE's SPRay-INTercooled (SPRINT) power boost technology,
- inlet air chiller cooling tower;
- chilled water system package;
- a 0.3-mile underground transmission line from the project to the Pala Substation;
- a 10-inch, approximately 2.4-mile length of natural gas lateral pipeline connected to the SDG&E main gas line;
- a 535,000-gallon raw water-fire water storage tank;
- a 275, 000 gallon demineralized water storage tank;
- a CO oxidation catalyst, as well as an aqueous ammonia SCR system;
- a gas-fired black start generator; and
- a diesel emergency fire water pump.

NATURAL GAS SUPPLY

Natural gas would be supplied to the OGP from an existing SDG&E 16-inch gas main located near the intersection of Rice Canyon Road and SR 76. An approximately 2.4- mile underground gas pipeline will be constructed from the gas main to the project site to convey natural gas to the project. A new 10-inch pipeline will be constructed with a metering station located near the tie-in point of the gas main. (**Project Description Figure 2**)

WATER SUPPLY

The OGP would require approximately 62 acre feet per year (AFY) for fresh water and 38.7 AFY for reclaimed tertiary treated water to meet its operational needs if the facility operates at the maximum allowable number of hours. It is highly likely the facility will operate at a fraction of the maximum hours (i.e., up to 6400 hours/year). Therefore, it is

expected that plant operation will consume around 21 AFY of fresh water and 12 AFY of reclaimed water. Orange Grove Energy has obtained rights to purchase water for the project from Fallbrook Public Utilities District (FPUD). Water will be picked up from two offsite pickup locations that will be constructed, owned and operated by FPUD. The fresh water pickup station is in Fallbrook, approximately 9.0 miles west of the site. The reclaimed water pickup station, also in Fallbrook, will be located within an existing FPUD water reclamation plant facility approximately 15.6 miles from the project site.

Water will be trucked to the project site using new single-trailer semi trucks with a capacity of approximately 6,500 gallons. Water hauling will entail approximately one truck per hour for fresh water and one truck per hour for reclaimed water during times when the plant is operational.

WASTEWATER AND STORM WATER DISCHARGE

Sanitary wastewater will be managed with an onsite septic system. Process wastewater consisting of blowdown water from the chiller system cooling towers and other non-oily wastewater streams will be collected and recycled using an onsite reverse osmosis (RO) water treatment system. Only a few hundred gallons per month of wastewater will not be recyclable onsite and will need to be trucked offsite for treatment at a licensed facility. With the RO system to recycle process wastewater onsite, the plant will function with essentially zero liquids discharge technology that eliminates wastewater and reduces water use. Surface drainage from the plant will flow to an on-site detention basin designed to receive flows from a 100-year storm and to manage storm water runoff in accordance with local ordinances.

HAZARDOUS WASTE

Hazardous wastes generated by the plant would include spent selective catalytic reduction and oxidation catalyst, used oil filters, used oil and chemical waste. Recycling will be the preferred waste management practice wherever possible. All other wastes will be disposed of if accordance with applicable laws, ordinances, regulations and standards at appropriately licensed waste disposal facilities.

TRANSMISSION SYSTEM

Construction of the electric transmission line interconnection to the Pala substation will occur within the limits of SDG&E's contiguous property. The transmission line interconnection will be installed in a 0.3-mile long, 69 kilovolt (kV), single circuit, underground transmission line, and for most of the transmission line interconnection length, installation will occur in a common trench with the gas pipeline. (**Project Description Figure 2)**

PROJECT CONSTRUCTION AND OPERATION

If approved by the Energy Commission, OGE proposes to initiate construction of the OGP in April 2009, provided there are no delays. The construction period is expected to last approximately six months, with scheduled commercial operations beginning October 1, 2009. The on-site construction workforce would peak at approximately 105 workers in the fifth month of construction, and average 70 workers over the construction

period. Construction hours will typically occur between 7 a.m. and 6 p.m. Monday through Friday. Operation and maintenance of the OGP will require nine full-time permanent staff. Construction costs are estimated to be approximately $100 million.

Primary construction access would be from I-5 to SR 76. Five acres of the approximately 202-acre parcel will serve as a laydown area accommodating storage of construction materials, equipment, construction offices, and parking, which OGE proposes to restore and re-vegetate after construction is complete.

REFERENCES

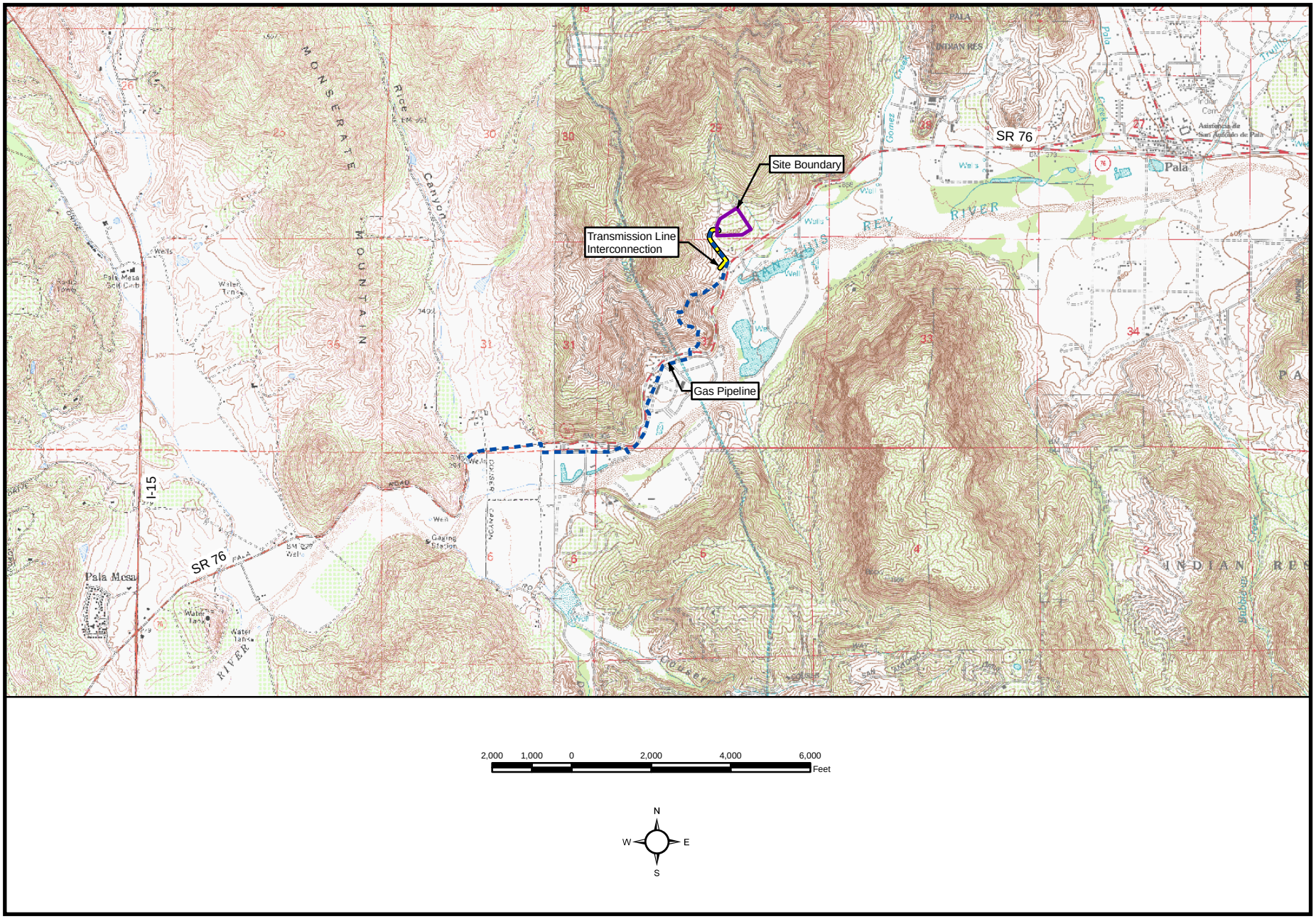
OGE2008a – S. Thome (tn46770) Application for Certification Orange Grove Energy dated 6/19/08. Submitted to Dockets 6/19/08.

PROJECT DESCRIPTION - FIGURE 1
Orange Grove Project - Local Setting

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION, NOVEMBER 2008
SOURCE: AFC Figure 6.5-3

PROJECT DESCRIPTION - FIGURE 2

Orange Grove Project - Project Vicinity and Linear Facility Routes



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION, NOVEMBER 2008

SOURCE: AFC Figure 1.1-2

ENVIRONMENTAL ASSESSMENT

AIR QUALITY

Testimony of William Walters

SUMMARY OF CONCLUSIONS

The Orange Grove Project should comply with all applicable laws, ordinances, regulations, and standards and should not result in significant air quality impacts provided the recommended conditions of certification are adopted by the Commission and implemented by the project owner. The applicant has agreed to fund the creation of emission reduction credits by private funding to the Carl Moyer Fund, or through similar means, in sufficient quantity to fully offset all nonattainment pollutants and their precursors at a minimum ratio of 1:1.

Staff has assessed both the potential for localized impacts and regional impacts for the project's construction and operation, and as a product of this analysis staff has recommended mitigation and monitoring requirements that should provide adequate mitigation and monitoring sufficient to reduce the adverse construction and operating emission impacts to less than significant.

Global climate change and greenhouse gas (GHG) emissions from the project are discussed and analyzed in AIR APPENDIX A. The Orange Grove Project, as a peaking project with an enforceable operating limitation less than 60% of capacity, is not subject to the requirements of SB1368 and the Emission Performance Standard. Staff recommends reporting of the GHG emissions as the Air Resources Board develops greenhouse gas regulations and/or trading markets. The project may be subject to additional reporting requirements and GHG reduction or trading requirements as these regulations become more fully developed and implemented.

Staff has provided comments on the District's Preliminary Determination of Compliance (PDOC) permit conditions that need to be resolved prior to completion of the Staff Assessment Addendum. Specific comments include inconsistencies with the applicant's supplied and stipulated emission rates and the emission rates in the PDOC and associated comments on the PDOC conditions. An addendum to this Staff Assessment will be prepared to address any changes needed to the emission rates and necessary revisions to the conditions of certification based on the conditions in the District's Final Determination of Compliance (FDOC).

INTRODUCTION

This analysis evaluates the expected air quality impacts of the emissions of criteria air pollutants due to the construction and operation of the proposed Orange Grove Project (OGP) by Orange Grove Energy, L.P. (applicant). The Site is located in north San Diego County, approximately 3.5 air miles northeast of Interstate (I) 15 on State Route (SR) 76, approximately 2.0 miles west of the community of Pala. The Site is located off of Pala Del Norte Road, a private road accessed from SR 76.

Criteria air pollutants are defined as those air contaminants for which the state and/or federal government has established an ambient air quality standard to protect public

health. The criteria pollutants analyzed are nitrogen dioxide (NO_2), sulfur dioxide (SO_2), CO, ozone (O_3), PM10, and PM2.5. In addition, VOC emissions are analyzed because they are precursors to both O_3 and particulate matter. Because NO_2 and SO_2 readily react in the atmosphere to form other oxides of nitrogen and sulfur respectively, the terms nitrogen oxides (NOx) and sulfur oxides (SOx) are also used when discussing these two pollutants.

In carrying out the analysis, the California Energy Commission staff evaluated the following major points:

- Whether OGP is likely to conform with applicable Federal, State and San Diego Air Pollution Control District (SDAPCD or District) air quality laws, ordinances, regulations and standards (Title 20, California Code of Regulations, section 1744 (b));
- Whether OGP is likely to cause significant air quality impacts, including new violations of ambient air quality standards or contributions to existing violations of those standards (Title 20, California Code of Regulations, section 1742 (b)); and
- Whether the mitigation proposed for OGP is adequate to lessen the potential impacts to a level of insignificance (Title 20, California Code of Regulations, section 1742 (b)).

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

The following federal, state, and local laws and policies pertain to the control of criteria pollutant emissions and mitigation of air quality impacts. Staff's analysis examines the project's compliance with these requirements.

Air Quality Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable Law	Description
Federal	
40 Code of Federal Regulations (CFR) Part 52	Nonattainment New Source Review (NSR) requires a permit and requires Best Available Control Technology (BACT) and offsets. Permitting and enforcement delegated to SDAPCD. Prevention of Significant Deterioration (PSD) requires major sources to obtain permits for attainment pollutants. A major source for a simple-cycle combustion turbine is defined as any one pollutant exceeding 250 tons per year. Since the emissions from OGP would not exceed 250 tons per year, PSD does not apply.
40 CFR Part 60 Subpart KKKK	New Source Performance Standard (NSPS) for gas turbines: 15 parts per million (ppm) NOx at 15% O_2 and fuel sulfur limit of 0.060 lb SOx per million Btu heat input. BACT is more restrictive.
40 CFR Part 70	Title V: federal permit. Title V permit application is required within one year of start of operation. Permitting and enforcement delegated to SDAPCD.
40 CFR Part 72	Acid Rain Program. Requires permit and obtaining sulfur oxides credits. Permitting and enforcement delegated to SDAPCD.
State	
Health and Safety Code (HSC) Section 40910-40930	Permitting of source needs to be consistent with Air Resource Board (ARB) approved Clean Air Plans.
HSC Section 41700	Restricts emissions that would cause nuisance or injury.
California Code of Regulations (CCR) Section 93115	Airborne Toxics Control Measure for Stationary Compression Ignition Engines. Limits the types of fuels allowed, established maximum emission rates, establishes recordkeeping requirements.
Local – San Diego Air Pollution Control District (SDAPCD) Rule and Regulations	
Regulation II – Permits	This regulation sets forth the regulatory framework of the application for and issuance of construction and operation permits for new, altered, and existing equipment. Included in these requirements are the federally delegated requirements for New Source Review, Title V Permits, and the Acid Rain Program. Regulation II Rule 20.1 and 20.3 establishes the pre-construction review requirements for new, modified, or relocated facilities, in conformance with the federal New Source Review regulation to ensure that these facilities do not interfere with progress in attainment of the national ambient air quality standards and that future economic growth in the San Diego County is not unnecessarily restricted. This regulation establishes Best Available Control Technology (BACT) and emission offset requirements.

Applicable Law	Description
Regulation IV – Prohibitions	This regulation sets forth the restrictions for visible emissions, odor nuisance, various air emissions, and fuel contaminants. This regulation also specifies additional performance standards for stationary gas turbines and other internal combustion engines. However, for this project these provisions are less strict than the new source rule requirements of Regulation II.
Regulation X – Standards of Performance for New Stationary Sources	Regulation X incorporates provisions of 40 CFR Part 60, Chapter I, and is applicable to all new, modified, or reconstructed sources of air pollution. Sections of this federal regulation apply to stationary gas turbines (40 CFR Part 60 Subpart KKKK) as described above in the federal LORS description. These subparts establish limits of NO_2 and SO_2 emissions from the facility as well as monitoring and test method requirements. SDAPCD has not yet been delegated enforcement authority for this NSPS, but expects delegation later this year.
Regulation XI – National Emission Standards for Hazardous Air Pollutants	Regulation XI adopts federal standards for hazardous air pollutants (40 CFR Part 63) by reference. No such standards presently exist that would apply to the project.
Regulation XII – Toxic Air Contaminants – New Source Review	Regulation XII, Rule 1200, establishes the pre-construction review requirements for new, modified, or relocated sources of toxic air contaminant, including requirements for Toxics Best Available Control Technology (T-BACT) if the incremental project risk exceeds rule triggers.
Regulation XIV – Title V Operating Permits	Regulation XIV, Rule 1401 defines the permit application and issuance as well as compliance requirements associated with the Title V federal permit program. Any new source which qualifies as a Title V facility must obtain a Title V permit within 12 months of starting operation modification of that source. Regulation II, Rule 1412 defines the requirements for the Acid Rain Program, including the requirement for a subject facility to obtain emission allowances for SOx emissions as well as monitoring SOx, NOx, and carbon dioxide (CO_2) emissions from the facility.

The District is currently working on several new rules, of which only one would directly impact the construction or operation of the proposed project. A fugitive dust rule, to be numbered Rule 55, is in the development process at the District. This rule may be promulgated before or during the proposed project's construction, and may be considered by the Air Pollution Control Board for adoption before the end of 2008 (SDAPCD 2008b); however, District staff has indicated that the Energy Commission's standard construction fugitive dust control measures are more stringent than the measures currently anticipated to be included in this future rule (Hamilton 2008).

SETTING

METEOROLOGICAL CONDITIONS

The climate of the San Diego Air Basin is controlled by a semi-permanent subtropical high-pressure system that is located off the Pacific Ocean. In the summer, this strong

high-pressure system results in clear skies, high temperatures, and low humidity. Very little precipitation occurs during the summer months because storms are blocked by the high-pressure system. Beginning in the fall and continuing through the winter, the high pressure weakens and moves south, allowing storm systems to move through the area. Temperature, winds, and rainfall are more variable during these months, and stagnant conditions occur more frequently than during summer months. Weather patterns include periods of stormy weather with rain and gusty winds, clear weather that can occur after a storm, or persistent fog. The project site, as determined using nearby Pala, receives an average of approximately 14 inches of rain annually (WC 2008).

The applicant provided two sets of wind speed and wind direction data collected in the Gregory Canyon monitoring station and the Escondido monitoring station (APPENDIX 6.2-A-Meteorological Data Summaries). The prevailing annual wind direction from Gregory Canyon is from the west southwest with the average speed of 2.18 meters/second (m/s). The west southwest direction is particularly dominant during the second and third quarter of the year. The wind during the first and fourth quarter has two major prevailing wind directions, which are from the west southwest and the east northeast. The wind speeds are generally faster in the second and third quarter and slower in the first and fourth quarter. Since the Gregory Canyon is located only 1 mile southwest of the site, and its meteorological data are closest to the project site, these data are used to model the ambient incremental criteria pollutant contributions for the Project. The prevailing annual wind direction observed from Escondido station is from the west with the average speed of 1.70 m/s. The westerly direction is particularly dominant in the second and third quarter while the first and the fourth quarter have slightly different prevailing wind direction. The first quarter has two major prevailing wind directions, which are from the west and east northeast. During the fourth quarter of the year, the prevailing wind direction is from the east.

Along with the wind flow, atmospheric stability and mixing heights are important factors in the determination of pollutant dispersion. Atmospheric stability reflects the amount of atmospheric turbulence and mixing. In general, the less stable an atmosphere, the greater the turbulence, which results in more mixing and better dispersion. The mixing height, measured from the ground upward, is the height of the atmospheric layer in which convection and mechanical turbulence promote mixing. Good ventilation results from a high mixing height and at least moderate wind speeds with the mixing layer. In general, mixing is more limited at night and in the winter in San Diego when there is a higher potential for lower level inversion layers being present along with low surface winds. Low level inversions are often more prevalent in terrain protected valley locations such as in the San Luis Rey River valley.

EXISTING AIR QUALITY

The project is located within the jurisdiction of the San Diego Air Pollution Control District (District). The applicable federal and California ambient air quality standards (AAQS) are presented in **Air Quality Table 2**. As indicated in this table, the averaging times for the various air quality standards (the duration over which they are measured) range from one-hour to annual average. The standards are read as a mass fraction, in parts per million (ppm), or as a concentration, in milligrams or micrograms of pollutant per cubic meter of air (mg/m^3 or $\mu g/m^3$).

The U.S. Environmental Protection Agency (U.S. EPA), California Air Resource Board (ARB), and the local air district classify an area as attainment, unclassified, or nonattainment, depending on whether or not the monitored ambient air quality data show compliance, insufficient data is available, or non-compliance with the ambient air quality standards, respectively. The Orange Grove project site is located within the San Diego Air Basin (SDAB) and, as stated above, is under the jurisdiction of the San Diego Air Pollution Control District. This area is designated as nonattainment for both the federal and state ozone standards and the state PM10 and PM2.5 standards. **Air Quality Table 3** summarizes federal and state attainment status of criteria pollutants for the SDAB.

The project site is located in northern San Diego County, 3.5 miles northeast of I-15 on SR-76, approximately 2 miles west of Pala and located off of Pala Del Norte Road. The project site is located on land owned by San Diego Gas & Electric (SDG&E) that also contains an existing SDG&E storage area and the existing Pala Substation south southwest of the OGP project site boundary.

Air Quality Table 2
Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	Federal Standard	California Standard
Ozone (O_3)	8 Hour	0.075 ppm (147 μg/m^3)	0.070 ppm (137 μg/m^3)
	1 Hour	—	0.09 ppm (180 μg/m^3)
Carbon Monoxide (CO)	8 Hour	9 ppm (10 mg/m^3)	9.0 ppm (10 mg/m^3)
	1 Hour	35 ppm (40 mg/m^3)	20 ppm (23 mg/m^3)
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.053 ppm (100 μg/m^3)	0.03 ppm (57 μg/m^3)
	1 Hour	—	0.18 ppm (339 μg/m^3)
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	0.030 ppm (80 μg/m^3)	—
	24 Hour	0.14 ppm (365 μg/m^3)	0.04 ppm (105 μg/m^3)
	3 Hour	0.5 ppm (1300 μg/m^3)	—
	1 Hour	—	0.25 ppm (655 μg/m^3)
Respirable Particulate Matter (PM10)	Annual Arithmetic Mean	—	20 μg/m^3
	24 Hour	150 μg/m^3	50 μg/m^3
Fine Particulate Matter (PM2.5)	Annual Arithmetic Mean	15 μg/m^3	12 μg/m^3
	24 Hour	35 μg/m^3	—
Sulfates (SO_4)	24 Hour	—	25 μg/m^3
Lead	30 Day Average	—	1.5 μg/m^3
	Calendar Quarter	1.5 μg/m^3	—
Hydrogen Sulfide (H_2S)	1 Hour	—	0.03 ppm (42 μg/m^3)
Vinyl Chloride (chloroethene)	24 Hour	—	0.01 ppm (26 μg/m^3)
Visibility Reducing Particulates	8 Hour	—	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70%.

Source: ARB 2008a.

Air Quality Table 3
Federal and State Attainment Status for the San Diego Air Basin

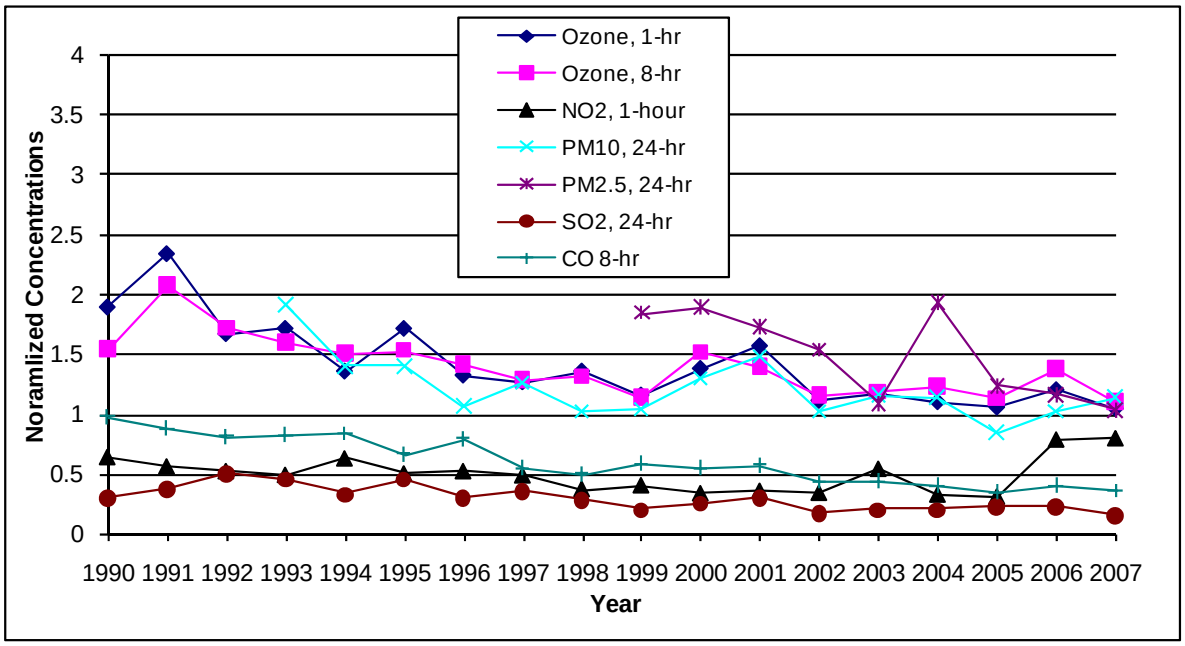
Pollutant	Attainment Status	
	Federal	State
Ozone	Nonattainment (8-hr)	Serious Nonattainment (1-hr)
CO	Attainment	Attainment
NO_2	Attainment	Attainment
SO_2	Attainment	Attainment
PM10	Attainment	Nonattainment
PM2.5	Attainment	Nonattainment

Source: ARB 2008b, U.S. EPA 2008.

The monitoring station closest to the proposed project site with a long-term record of all the criteria pollutants, except SO_2, is the Escondido – E Valley Parkway Station, located approximately 16 miles south of the project site. This station monitors ambient concentrations of ozone, NO_2, CO, PM10, and PM2.5. The San Diego 1110 Beardsley Street Station, approximately 45 miles south of the project site, is the closest station that has most recently monitored SO_2 concentrations; however, in the past SO_2 has been monitored closer to the project site (Escondido). To the extent that monitoring data from the Escondido and San Diego monitoring stations have been used to characterize conditions at the project site, this practice would generally overestimate existing pollutant levels at the OGP site because of the much lower population and level of development of the project area compared to the urban/suburban areas of Escondido and San Diego.

Air Quality Figure 1 summarizes the historical air quality data for the project location, recorded at Escondido - E Valley Parkway (1990-2007 for ozone, CO, NO_2; 1993-2007 for PM 10; 1999-2007 for PM2.5; 1990-1992 for SO_2), San Diego 12th Avenue (1993-2005 for SO_2), and San Diego 1110 Beardsley Street (2005-2007) air monitoring stations. In **Air Quality Figure 1**, the short term normalized concentrations are provided from 1990 to 2007. Normalized concentrations represent the ratio of the highest measured concentrations in a given year to the most-stringent applicable national or state ambient air quality standard. Therefore, normalized concentrations lower than one indicates that the measured concentrations were lower than the most-stringent ambient air quality standard.

Air Quality Figure 1
Normalized Maximum Short-Term Historical Air Pollutant Concentrations



Source: ARB 2008c, SDAPCD 2008a

A normalized concentration is the ratio of the highest measured concentration to the applicable most stringent air quality standard. For example, in 1999 the highest one-hour average ozone concentration measured at the Escondido-E Valley Parkway was 0.104 ppm. Since the most stringent ambient air quality standard is the state standard of 0.09ppm, the 1999 normalized concentration is 0.104/0.09=1.156

Following is a more in-depth discussion of ambient air quality conditions in the project area.

Ozone

In the presence of ultraviolet radiation, both nitrogen oxides (NOx) and volatile organic compounds (VOC) go through a number of complex chemical reactions to form ozone. **Air Quality Table 4** summarizes the most representative ambient ozone data collected from the Escondido E Valley Parkway monitoring station. The table includes the maximum one-hour and eight-hour ozone levels and the number of days above the state or national standards. Ozone formation is higher in spring and summer and lower in the winter. The SDAB was classified as an attainment area for the previous federal 1-hour ozone standard (no longer applicable) and is currently classified as a basic nonattainment area for the federal 8-hour ozone standard. The SDAB is also classified as a serious nonattainment area for the state 1-hour ozone standard.

Air Quality Table 4
Ozone Air Quality Summary, 1990-2007 (ppm)

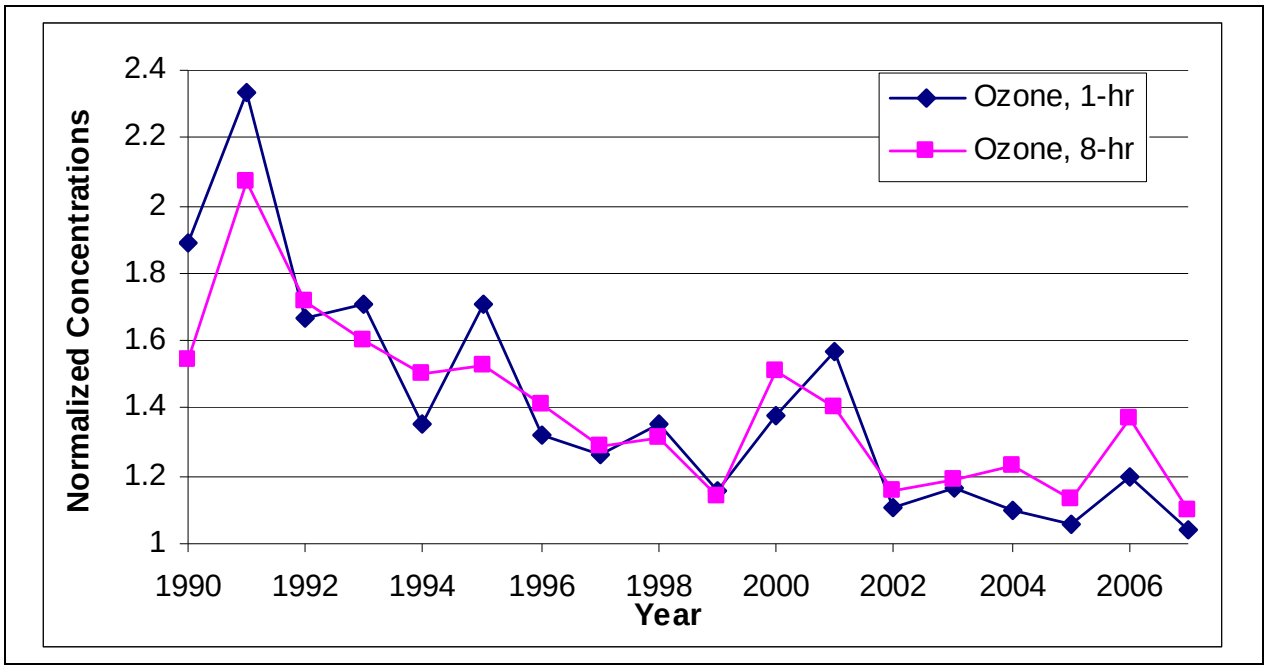
Year	Days Above CAAQS 1-Hr	Month of Max. 1-Hr Avg.	Max. 1-Hr Avg.	Days Above CAAQS 8-Hr	Month of Max. 8-Hr Avg.	Max. 8-Hr Avg.
1990	26	JUN	0.170	37	JUN	0.109
1991	27	OCT	0.210	48	OCT	0.145
1992	25	APR	0.150	48	APR	0.120
1993	16	SEP	0.154	37	SEP	0.113
1994	10	AUG	0.122	22	AUG	0.106
1995	12	JUL	0.154	24	JUL	0.108
1996	12	JUN	0.119	25	JUN	0.099
1997	5	OCT	0.114	15	JUL	0.090
1998	9	JUL	0.122	17	AUG	0.092
1999	1	AUG	0.104	4	APR	0.080
2000	6	SEP	0.124	13	SEP	0.106
2001	4	SEP	0.141	8	SEP	0.099
2002	2	SEP	0.100	3	SEP	0.082
2003	3	SEP	0.105	9	SEP	0.084
2004	2	APR	0.099	9	APR	0.087
2005	1	SEP	0.095	2	APR	0.080
2006	3	JUL	0.108	11	JUL	0.097
2007	0	AUG	0.094	5	SEP	0.078
California Ambient Air Quality Standard (CAAQS): 1-Hr, 0.09 ppm, 8-Hr, 0.070 ppm National Ambient Air Quality Standard (NAAQS): 8-Hr, 0.075 ppm						

Source: ARB 2008c

The yearly trends from 1990 to 2006 for the maximum one-hour and eight-hour ozone concentrations, referenced to the most stringent standard, and the number of days exceeding the California one-hour standard and the federal eight-hour standard for the Escondido-E Valley Parkway (1990-2006) monitoring station are shown in **Air Quality Figure 2** and **Figure 3**, respectively.

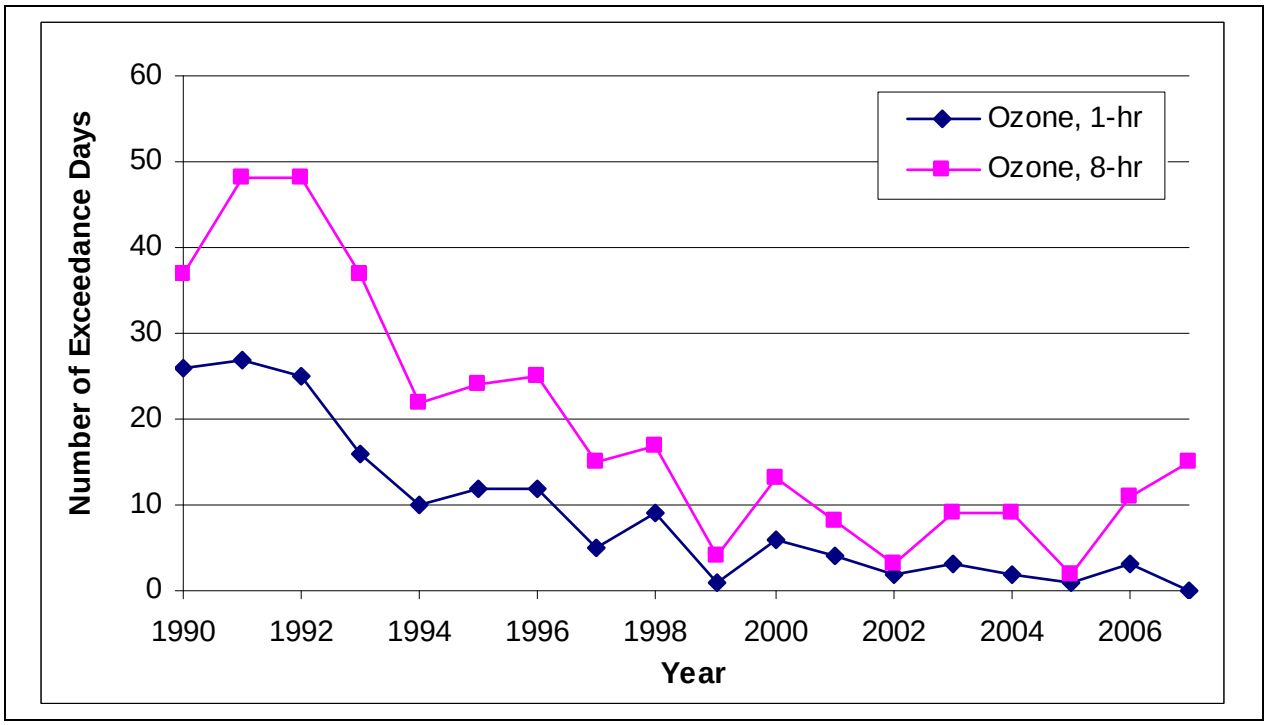
As these two figures show, the one-hour and eight-hour ozone concentrations and the number of exceedances were highest in 1991. There has been a trend of gradual improvements in ozone concentrations since 1990.

Air Quality Figure 2
Normalized Ozone Air Quality Maximum Concentrations



Source: ARB 2008c.

Air Quality Figure 3
Ozone – Number of Days Exceeding the Air Quality Standards



Source: ARB 2008c.

Respirable Particulate Matter (PM10)

The SDAB is classified as an attainment area for the federal PM10 standard and as a nonattainment area for the state PM10 standards. **Air Quality Table 5** summarizes the most representative ambient PM10 data collected from the Escondido E Valley Parkway monitoring station. As can be seen the monitoring station closest to the project area annually experiences a number of violations of the state 24-hour PM10 standard.

Air Quality Table 5
PM10 Air Quality Summary, 1993-2007 ($\mu g/m^3$)

Year	Days * Above Daily CAAQS	Month of Max. Daily Avg.	Max. Daily Avg.	Annual Arithmetic Mean
1993	30	OCT	96	31.8
1994	30	NOV	70	35.3
1995	--	DEC	70	--
1996	12	DEC	53	26.7
1997	19	OCT	63	28.8
1998	--	OCT	51	--
1999	0	DEC	52	29.7
2000	12	DEC	65	29.5
2001	13	JAN	74	30.6
2002	0	SEP	51	27
2003	31	DEC	58[a]	33
2004	6	JAN	57	27.3
2005	0	OCT	42	23.9
2006	6	DEC	51	24.2
2007	12	NOV	57[a]	24

California Ambient Air Quality Standard: 24-Hr, 50 $\mu g/m^3$; Annual Arithmetic, 20 $\mu g/m^3$
National Ambient Air Quality Standard: 24-Hr, 150 $\mu g/m^3$

* Days above the state standard (calculated and rounded): PM10 is monitored approximately once every six days. This value is a mathematical estimate of how many days the PM10 concentrations would have been greater than the level of the standard had each day been monitored.

[a] Excludes 2003 and 2007 firestorm events

Source: ARB 2008c, SDAPCD 2008a.

PM10 can be emitted directly or it can be formed many miles downwind from emission sources when various precursor pollutants interact in the atmosphere. Gaseous emissions of pollutants like NOx, SOx and VOC from turbines, and ammonia from NOx control equipment, given the right meteorological conditions, can form particulate matter in the form of nitrates (NO_3), sulfates (SO_4), and organic particles. These pollutants are known as secondary particulates, because they are not directly emitted, but are formed through complex chemical reactions in the atmosphere.

PM nitrate (mainly ammonium nitrate) is formed in the atmosphere from the reaction of nitric acid and ammonia. Nitric acid in turn originates from NOx emissions from combustion sources. The nitrate ion concentrations during the wintertime are a significant portion of the total PM10, and are likely even a higher contributor to

particulate matter of less than 2.5 microns (PM2.5). The nitrate ion is only a portion of the PM nitrate, which can be in the form of ammonium nitrate (ammonium plus nitrate ions) and some as sodium nitrate. If the ammonium and the sodium ions associated with the nitrate ion are taken into consideration, PM nitrate contributions to the total PM are even more significant.

As shown in **Air Quality Table 5**, the highest PM10 concentrations are generally measured in the fall and winter when there are frequent low-level inversions. During the wintertime high PM10 episodes, the contribution of ground level releases to ambient PM10 concentrations is disproportionately high.

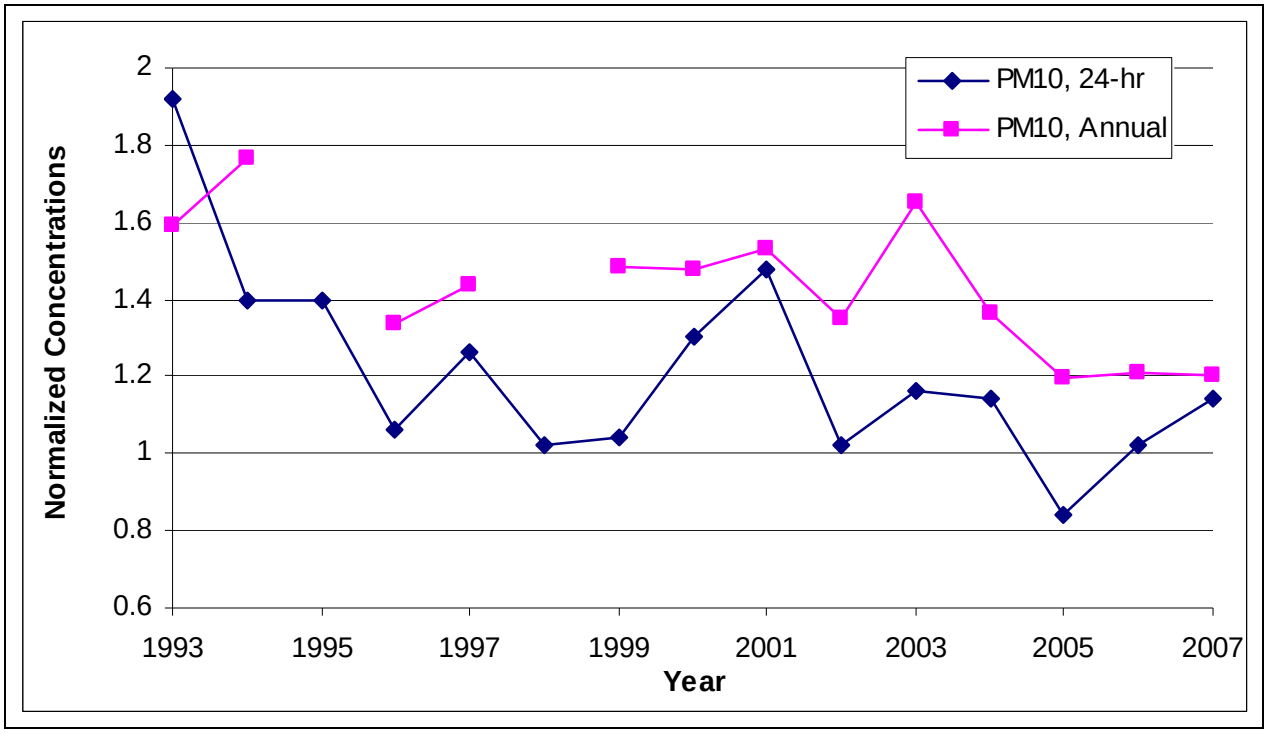
The 1993 to 2007 yearly trends for the maximum 24-hour PM10 and Annual Arithmetic Mean PM10, referenced to the most stringent standard, and the number of days exceeding the California 24-hour PM10 standard for the Escondido - E Valley Parkway (1993-2007) monitoring station is shown in **Air Quality Figure 4** and **Figure 5**, respectively.

As the two figures show, there is an overall gradual downward trend for PM10 concentrations and number of violations of the California 24-hour standard since 1993 however; there has been little progress since 1996.

Fine Particulate Matter (PM2.5)

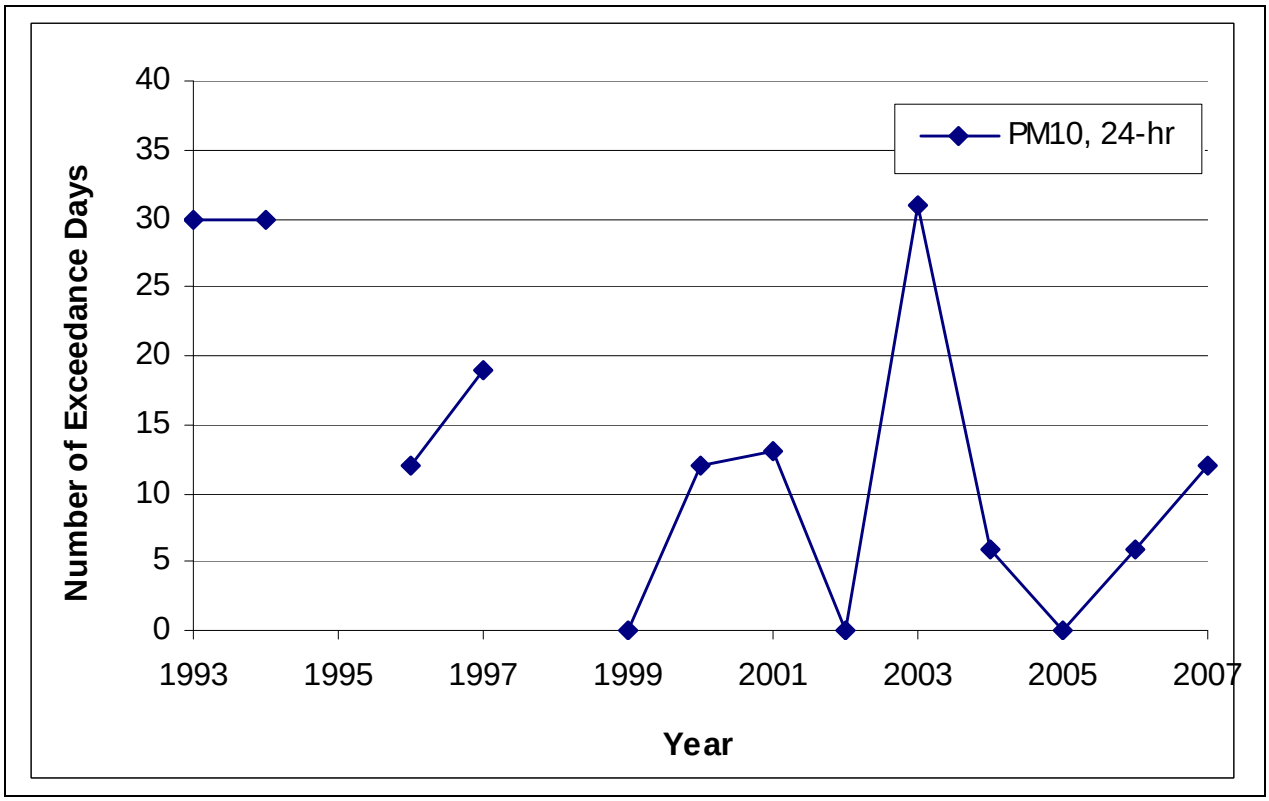
The SDAB is classified as nonattainment for the state respirable particulate matter (PM2.5) standard. The highest PM2.5 concentrations are generally measured in the winter. The relative contribution of wood-smoke particles to the PM2.5 concentrations may be even higher than its relative contribution to PM10 concentrations, considering that most of the wood-smoke particles are smaller than 2.5 microns.

Air Quality Figure 4
Normalized PM10 Air Quality Maximum Concentrations



Source: ARB 2008c, SDAPCD 2008a.

Air Quality Figure 5
PM10 24-Hour – Number of Days Exceeding the California Air Quality Standard



Source: ARB 2008c, SDAPCD 2008a.

As **Air Quality Table 6** indicates, the 24-hour (1-year average 98th percentile) and annual average PM2.5 concentration levels have been declining from 1999 to 2007.

Air Quality Table 6
PM2.5 Air Quality Summary, 1999-2007 ($\mu g/m^3$)

Year	National Maximum Daily	98th Percentile Maximum Daily	State Annual Average	National Annual Average
Escondido-E Valley Parkway				
1999	64.3	--	--	18
2000	65.9	--	--	15.8
2001	60	40.8	--	17.5
2002	53.6	--	--	16
2003	38[a]	33.9	14.2	14.2
2004	67.3	37.4	14.1	14.1
2005	43.1	--	12	12
2006	40.6	28.3	11.5	11.5
2007	36[a]	37.7	12	12

California Ambient Air Quality Standard: Annual Arithmetic Mean, 12 $\mu g/m^3$
National Ambient Air Quality Standard: 24-Hr Avg. Conc., 35 $\mu g/m^3$ (based on 98% of the daily concentrations, average over three years); Annual Arithmetic Mean, 15 $\mu g/m^3$

[a] Excludes 2003 and 2007 firestorm events

Source: ARB 2008c, SDAPCD 2008a.

The maximum daily PM2.5 concentrations shown in **Air Quality Table 6** all occurred in the late fall or winter (fourth and first quarters).

Carbon Monoxide (CO)

The highest concentrations of CO occur when low wind speeds and a stable atmosphere trap the pollution emitted at or near ground level in what is known as the stable boundary layer. These conditions occur frequently in the wintertime, late in the afternoon, persist during the night and may extend one or two hours after sunrise. Since mobile sources (motor vehicles) are the main cause of CO, ambient concentrations of CO are highly dependent on motor vehicle activity. In fact, the peak CO concentrations occur during the rush hour traffic in the mornings and afternoons. CO concentrations in San Diego County and the rest of the state have declined significantly due to two state-wide programs: 1) the 1992 wintertime oxygenated gasoline program, and 2) Phases I and II of the reformulated gasoline program. New vehicles with oxygen sensors and fuel injection systems have also contributed to the decline in CO levels in the state. Today, the entire State of California is in attainment with the CO ambient air quality standards.

As **Air Quality Table 7** shows, the maximum one-hour and eight-hour CO concentrations in the project area are less than the California Ambient Air Quality Standards. CO is considered a local pollutant, as it is found in high concentrations only near the source of emission. Automobiles and other mobile sources are the principal sources of the CO emissions. High levels of CO emissions can also be generated from fireplaces and wood-burning stoves. According to the data recorded at the Escondido- E

Valley Parkway air monitoring station, there have been no violations of the California Ambient Air Quality Standards since 1990 for the one-hour and eight-hour CO standards. (see **Air Quality Figure 1 and Table 7**).

Air Quality Table 7
CO Air Quality Summary, 1990-2007 (ppm)

Year	Month of Max. 8-Hr Average	Maximum 1-Hr Average	Maximum 8-Hr Average
Escondido – E Valley Parkway			
1990	JAN	18	8.75
1991	DEC	12	7.88
1992	JAN	14	7.25
1993	NOV	11.4	7.38
1994	DEC	11	7.51
1995	NOV	9.9	5.95
1996	JAN	11.2	7.13
1997	NOV	9.3	4.91
1998	JAN	10.2	4.45
1999	DEC	9.9	5.26
2000	NOV	9.3	4.93
2001	JAN	8.5	5.11
2002	JAN	8.5	3.85
2003	FEB	8.9	3.9
2004	DEC	6.3	3.61
2005	JAN	5.9	3.1
2006	DEC	5.7	3.61
2007	DEC	5.2	3.19
California Ambient Air Quality Standard: 1-Hr, 20 ppm; 8-Hr, 9.0 ppm National Ambient Air Quality Standard: 1-Hr, 35 ppm; 8-Hr, 9 ppm			

Source: ARB 2006a, ARB2008c, SDAPCD 2008a.

Nitrogen Dioxide (NO_2)

As shown in **AIR QUALITY Table 8,** the maximum one-hour and annual concentrations of NO_2 at the Escondido - E Valley Parkway monitoring station are lower than the California and National Ambient Air Quality Standards.

Approximately 75-90% of the NOx emitted from combustion sources is NO, while the balance is NO_2. NO is oxidized in the atmosphere to NO_2, but some level of photochemical activity is needed for this conversion. This is why the highest concentrations of NO_2 generally occur during the fall and not in the winter, when atmospheric conditions favor the trapping of ground level releases, but lack significant photochemical activity (less sunlight). In the summer, the conversion rates of NO to NO_2 are high, but the relatively high temperatures and windy conditions (atmospheric unstable conditions) generally disperse pollutants, preventing the accumulation of NO_2

to levels approaching the California one-hour ambient air quality standard. The formation of NO_2 in the summer, in the presence of ozone, is according to the following reaction:

$$NO + O_3 \rightarrow NO_2 + O_2$$

In urban areas, ozone concentration levels are typically high. These levels drop substantially at night as the above reaction takes place between ozone and NO. This reaction explains why, in urban areas, ozone concentrations at ground level drop, while aloft and in downwind rural areas (without sources of fresh NOx emissions) ozone concentrations can remain relatively high.

Air Quality Table 8
NO_2 Air Quality Summary, 1996-2007 (ppm)

Year	Month of Max. 1-Hr Average	Maximum 1-Hr Average	Maximum Annual Average
Escondido- E Valley Parkway			
1990	OCT	0.16	0.029
1991	FEB	0.14	0.028
1992	JAN	0.13	0.026
1993	SEP	0.122	0.022
1994	JAN	0.157	0.024
1995	NOV	0.125	0.026
1996	NOV	0.13	0.020
1997	OCT	0.121	0.021
1998	OCT	0.092	0.018
1999	MAR	0.1	0.023
2000	NOV	0.083	0.021
2001	NOV	0.088	0.020
2002	FEB	0.084	0.021
2003	OCT	0.135	0.020
2004	OCT	0.08	0.018
2005	OCT	0.076	0.016
2006	NOV	0.071	0.017
2007	NOV	0.072	0.016
California 1-Hr Ambient Air Quality Standard: 0.18 ppm California Annual Arithmetic Mean Ambient Air Quality Standard: 0.030 ppm			

Source: ARB 2008c, SDAPCD 2008a.

Sulfur Dioxide (SO_2)

Sulfur dioxide is typically emitted as a result of the combustion of a fuel containing sulfur. Fuels, such as natural gas, contain very little sulfur and consequently have very low SO_2 emissions when combusted. By contrast, fuels high in sulfur content, such as coal, emit very large amounts of SO_2 when combusted.

Sources of SO_2 emissions within the SDAB come from every economic sector and include a wide variety of fuels: gaseous, liquid and solid. The SDAB is designated

attainment for all the SO_2 state and federal ambient air quality standards. **Air Quality Table 9** shows the historic one-hour, 24-hour and annual average SO_2 concentrations collected from the Escondido – E Valley Parkway and San Diego 12 Avenue monitoring stations. As **Air Quality Table 9** shows, concentrations of SO_2 are far below the state and federal SO_2 ambient air quality standards.

Air Quality Table 9
SO_2 Air Quality Summary, 1990-2007 (ppm)

Year	Maximum 1-Hr Avg.	Month of Max. 24-Hr Avg.	Maximum 24-Hr Avg.	Annual Average
Escondido- E Valley Parkway				
1990	0.030	DEC	0.012	0.002
1991	0.070	FEB	0.015	0.003
1992	--	JAN	0.013	0.004
San Diego – 12 Avenue				
1993	0.047	JAN	0.018	0.003
1994	0.069	JUN	0.013	0.003
1995	0.063	AUG	0.018	0.003
1996	0.048	APR	0.012	0.003
1997	0.052	MAY	0.014	0.003
1998	0.04	JUL	0.011	0.003
1999	0.039	AUG	0.008	0.002
2000	0.038	SEP	0.010	0.004
2001	0.052	AUG	0.012	0.003
2002	0.028	SEP	0.007	0.003
2003	0.036	JAN	0.008	0.004
2004	0.042	SEP	0.008	0.004
San Diego – 1110 Beardsley Street				
2005	0.036	SEP	0.005	0.003
2006	0.034	FEB	0.009	0.004
2007	0.018	OCT	0.006	0.003
California Ambient Air Quality Standard: 1-Hr, 0.25 ppm; 24-Hr, 0.04 ppm National Ambient Air Quality Standard: 3-Hr, 0.5 ppm; 24-Hr, 0.14 ppm; Annual, 0.030 ppm				

Source: ARB 2006a, ARB 2008c, SDAPCD 2008a.

Visibility

Visibility in the region of the project site depends upon the area's natural relative humidity and the intensity of both particulate and gaseous pollution in the atmosphere. The most straightforward characterization of visibility is probably the visual range (the greatest distance that a large dark object can be seen). However, in order to characterize visibility over a range of distances, it is more common to analyze the changes in visibility in terms of the change in light-extinction that occurs over each additional kilometer of distance (1/km). In the case of a greater light-extinction, the visual range would decrease.

The SDAB is currently designated as unclassified for visibility reducing particles.

Summary

In summary, staff recommends the background ambient air concentrations in **Air Quality Table 10** for use in the modeling and impacts analysis. The maximum criteria pollutant concentrations from the past three years of available data collected at the monitoring stations within San Diego County are used to determine the recommended background values. The use of these recommended three-year maximum concentrations as background provides for a conservative ambient air quality analysis.

Air Quality Table 10
Staff Recommended Background Concentrations (µg/m^3)

Pollutant	Averaging Time	Recommended Background	Limiting Standard	Percent of Standard
NO_2	1 hour	143.1	339	42%
	Annual	32.3	57	57%
PM10	24 hour	57	50	114%
	Annual	24.2	20	121%
PM2.5	24 hour	37.7	35	108%
	Annual	12	12	100%
CO	1 hour	6,785	23,000	30%
	8 hour	4,011	10,000	40%
SO_2	1 hour	94.3	655	14%
	3 hour [a]	84.9	1,300	7%
	24 hour	23.6	105	23%
	Annual	10.7	80	13%

Source: ARB 2008c, SDAPCD 2008a and Energy Commission Staff Analysis
[a] The 3 hour background SO_2 concentration is assumed to be 90% of the 1 hour background.

Where possible, staff prefers that the recommended background concentrations come from nearby monitoring stations with similar characteristics; however no monitoring stations in similar rural areas are located near the project site. Monitoring stations located within larger urban areas (Escondido- E Valley Parkway and San Diego) provide conservative estimates for background concentrations. For all pollutants, except for SO_2, the highest monitored values from the Escondido- E Valley Parkway monitoring station were used to determine the background concentrations. For SO_2, the monitored concentrations from the 1110 Beardsley Street monitoring station in San Diego were used to determine the background concentrations.

The background concentrations for PM10 and PM2.5 are at or above the most restrictive existing ambient air quality standards, while the background concentrations for the other pollutants are all well below the most restrictive existing ambient air quality standards.

The pollutant modeling analysis was limited to the pollutants listed above in **Air Quality Table 10**; therefore, recommended background concentrations were not determined for the other criteria pollutants (ozone, lead, visibility, etc.)

PROJECT DESCRIPTION AND EMISSIONS

Orange Grove Energy, L.P. (Orange Grove Energy) has proposed the Orange Grove Project (the "Project") to develop, build, own, and operate a 96 megawatt (MW) simple cycle power station. This project is being developed in response to a San Diego Gas & Energy (SDG&E) Request for Offers for new generating capacity to support reliability. The station would be on an 8.5-acre site in a rural area of northern San Diego County, California. The site is located on disturbed lands formerly used as a citrus grove, but the grove has not been maintained in at least 5 years. The existing SDG&E Pala substation is located on a continuous SDG&E parcel south of the site.

Orange Grove Energy would be responsible for construction of the power plant, the electric transmission line interconnection between the power plant and the substation boundary, and the gas pipeline from a tie-in at an existing SDG&E gas transmission main to the plant. Orange Grove Energy would operate the plant, which would employ up to 9 full-time onsite staff. Natural gas fuel would be supplied by SDG&E, and electric power generated would be supplied to SDG&E under a tolling agreement.

The project is designed as a peaking facility to supply electric power locally, primarily during times of high demand, which generally occur during daylight hours, and most frequently during the summer months. While being permitted for a total of 6,400 turbine hours of operation with 500 total starts annually, the facility is actually expected to operate less than 2,000 turbine hours to meet the peaking electricity demand. Additionally the plant would be limited to 6 total starts for both turbines each day.

CONSTRUCTION

Construction of the Orange Grove project would consist of the following: 1) clearing of agricultural vegetation; grading; hauling and laydown of equipment, materials, and supplies; facility construction; and testing; 2) the electric transmission line interconnection to the Pala substation; 3) gas pipe line construction. The construction period is expected to last approximately 6 months beginning in April 2009.

Combustion emissions during the construction of the project result from exhaust sources, including but not limited to diesel construction equipment used for site preparation, water trucks used to control dust emissions, cranes, diesel-powered welding machines, electric generators, air compressors, water pumps, diesel trucks used for deliveries, and automobiles used by workers to commute to and from the construction site.

Emissions of fugitive particulate matter (PM10 and PM2.5) result from grading and excavating disturbed areas, earthmoving operations and unpaved roadway during Site and pipeline construction. In addition to the pipeline construction, minor improvements would be made by Orange Grove Energy to the fresh and reclaim water supply pickup stations. Since the minimal improvements at the water pickup stations are minor and remote from the project site, they are not expected to result in significant air emissions.

Applicant estimates for the highest emissions during construction, which occur during initial site grading, are provided in **Air Quality Table 11**.

Air Quality Table 11
Summary of Onsite Construction Maximum Daily Emissions, lbs/day

Activity	NO_x	CO	VOC	SO_x	PM10	PM2.5
Equipment Combustion Emissions	132.82	59.65	14.27	0.11	5.80	5.34
Earth Moving Fugitive Dust	--	--	--	--	12.09	4.02
Material Handling Fugitive Dust	--	--	--	--	1.03	0.16
Unpaved Roadway Fugitive Dust	--	--	--	--	18.67	1.87
Total Maximum Daily Emissions	132.82	59.65	14.27	0.11	37.59	11.39

Source: OGE 2008a, as corrected and augmented by Energy Commission Staff.

The maximum daily emissions shown above were used for modeling maximum short-term construction emission air quality impacts.

The total emissions during construction, including onsite and offsite emissions are summarized in **Air Quality Table 12**.

Air Quality Table 12
Summary of Total Construction Emissions, tons

Activity	NO_x	CO	VOC	SO_x	PM10	PM2.5
Onsite						
Site Preparation/Grading	1.14	0.55	0.14	0.001	0.06	0.05
Main Site Construction	2.02	1.16	0.55	0.003	0.15	0.14
Fugitive Dust	---	---	---	---	0.25	0.06
Offsite						
Gas Line Construction	0.58	0.36	0.13	0.001	0.05	0.04
Worker and Delivery Trucks	0.49	2.89	0.31	0.000	0.04	0.03
Paved Road Fugitive Dust	---	---	---	---	0.27	0.05
Total Emissions	4.23	4.96	1.13	0.005	0.80	0.37

Source: OGE 2008a, as amended by Energy Commission Staff.

The onsite emissions shown above were used for modeling the annual construction emission air quality impacts.

INITIAL COMMISSIONING

The initial commissioning of a power plant refers to the time between the completion of construction and the reliable production of electricity for sale on the market. For most power plants, normal operating emission limits usually do not apply during the initial commissioning activities.

Commissioning activities, as stipulated by the applicant, would occur only from 7 am to 7 pm for this project. Commissioning activities for the project CTGs are expected to last approximately 60 hours for each turbine. However, to account for potentially longer testing requirements, 200 hours of commissioning for each turbine would be provisioned in the permit. Commissioning would consist of the following test periods.

1. First fire of the unit, where each unit is operated on fuel at speeds ranging from minimum idle to full speed at no load and not tied to the grid. Correct electrical phase rotation is established and systems are checked out and tunes. (e.g. fuel gas compressors and the gas turbine fuel system). One 12-hour day per unit.

2. Synchronization, where the unit is tied to the grid and operated at low load (<15 MW with no water injection and SCR operation). Controls are tuned during this phase to establish reliable starting and stopping of the unit. Two 12-hour days per unit.

3. Low-load to full-load operation (approximately 1.5 MW to full-load, no SCR operation). Water injection and watering schedule are established during this phase to establish the desired gas turbine emissions profile. The gas turbine and generator excitation system controls are tuned to provide desired response. One 6-hour day per unit.

4. Low load to full-load operation (>15 MW to full-load), with water injection and SCR in operation. The SCR is commissioned and tuned. One 6-hour day per unit.

5. Power augmentation equipment (SPRINT and inlet chilling systems) are commissioned and tuned. SCR is re-tuned if necessary to account for power augmentation equipment. One 12-hour day per unit.

Only one unit would be commissioned at a time until both units can operate with fully-functioning emission control (SCR and oxidation catalyst) systems. This would minimize the maximum short term emissions potential during initial commissioning. **Air Quality Table 13** presents the applicant's estimated short-term emissions for each of the commissioning activities.

Air Quality Table 13
Summary of Maximum Short-Term Commissioning Emissions, lbs/hr

Commissioning Activity	Hours per Turbine		Emission Rate (lbs/hr)				
	Planned	Permitted	NO_x	CO	VOC	SO_x	PM10/PM2.5
First Fire	12	40	30.10	5.44	0.36	0.29	1.20
Synchronization	24	80	30.10	5.44	0.36	0.29	1.20
Low Load to Full Load, no SCR	6	20	20.61	12.56	0.58	0.48	1.66
Low Load to Full Load, SCR	6	20	2.06	4.40	0.58	0.48	1.66
Full Load with Sprint	12	40	4.35	15.37	1.21	1.00	3.00

Source: OGE 2008a.

While the maximum expected short-term emission rates are shown above, the absolute peak short-term emission rate for NOx and CO modeled was higher than the values listed above at 50 lbs/hour and 43.9 lbs/hour, respectively. The commissioning 1-hour emission limits are based on these absolute peak values.

Air Quality Table 14 presents the applicant's estimated total initial commissioning emissions for the Orange Grove gas turbines. It is important to note that commissioning emissions are worst-case, one-time emissions that would occur within a short 4 week window and only one turbine at a time would be operated without fully functioning emission controls during initial commissioning.

Air Quality Table 14
Summary of Maximum Commissioning Emissions, tons

Activity	NO_x	CO	VOC	SO_x	PM10/PM2.5
Planned (Each Turbine)	0.635	0.24	0.015	0.015	0.05
Planned (Total both Turbines)	1.27	0.48	0.03	0.03	0.10
Permitted (Total both Turbines)	4.24	1.61	0.11	0.09	0.33

Source: OGE 2008a.

OPERATIONAL PHASE

Equipment Description

The equipment for the proposed Orange Grove project would include the following major components (OGE 2008a):

- Two General Electric LM6000 PC SPRINT combustion turbine generators (CTGs) with SPRINT Power Boost System, each rated at approximately 50 MW;
- The CTGs would each be equipped with water injection to the combustors for reducing production of NOx, a selective catalytic reduction (SCR) system with 19% aqueous ammonia injection to further reduce NOx emissions, and an oxidation catalyst to reduce CO emissions;
- Inlet air filter system;
- Cooling tower consists of three Baltimore Aircoil Company Model 31132C cells equipped with drift eliminators;
- Black start engine, Cummins Model GTA38-G2 or equivalent natural gas fired engine producing 965 brake horsepower (bhp);
- Fire pump engine, Cummins Model CFP11E-F10 or equivalent diesel fired engine producing 373 bhp;
- Two exhaust stacks from the two CTGs (diameter of 12.5-feet and height of 80-feet);
- Two Emissions Control Module systems for control of NO_x and CO including tempering air fans and dilution air blowers;
- A continuous emission monitoring (CEM) system installed on each stack would record concentrations of NOx, CO, CO_2, and oxygen in the flue gas;
- Raw water storage tank (535,000 gallons);
- One demineralized water storage tanks (100,000 gallons); and
- One 10,000 gallon aqueous ammonia tanks.

Orange Grove Energy would purchase new single-trailer semi trucks for hauling the operations water supply to the site. The trucks would be fueled with ultra low-sulfur diesel fuel and would have a capacity of approximately 6,500 gallons. The water supply is planned to be obtained using both a reclaim water pickup station and a fresh water pickup station. Water hauling would entail approximately one truck per hour for fresh water and one truck per hour for reclaim water for times that the plant is operating. Based on expected use of the plant, water hauling is expected to typically occur about

60 days per year. The plant would typically run the most during summer months and onsite storage would provide substantial storage capacity for peak operating days.

Facility Operation

The Orange Grove plant is proposed to provide up to 6,400 hours (3,200 per turbine) of annual operation to SDG&E. The facility is capable of operating continually (24 hours per day, seven days per week) if called and needed to support the electric system but it is not anticipated to be dispatched at this level. The actual hours that the plant would run annually for each mode of operation are expected to be less than 2,000 turbine hours to meet the peaking electricity demand.

The proposed startup and operating limits for the project are outlined as follows:

- One-time startup and commissioning - 400 hours total:
  - 240 hours of uncontrolled emissions for startup and commissioning of each CTG.
  - 40 hours per unit with emissions controlled at the turbine only (approximately 25 ppmvd NO_x and 25 ppmvd CO, both corrected to 15% O_2), for startup and commissioning of the SCR and oxidation catalyst systems.
- Annual operation (two turbines combined) – 6,400 hours total:
  - 5,960 turbine hours of fully controlled emissions.
  - 40 turbine hours of emissions controlled at the CTGs only for annual maintenance and testing.
  - 500 combined startups composed of 10 minutes of uncontrolled emissions (water injected CTGs only; no additional reduction via catalyst) and 30 minutes of linearly decreasing controlled emissions as the CO and NO_x catalyst become effective.
  - 500 combined shutdowns composed of 8 minutes of uncontrolled emissions (water-injected CTGs only).
- Emergency equipment testing emissions:
  - Diesel-driven fire pump tested weekly for 30 minutes.
  - Black-start generator tested monthly for 30 minutes.
  - Each CTG, to the extent not operated in the previous 2 weeks, would be started approximately once per month and operated for 1 hour.

Emission Controls

The exclusive use of pipeline-quality natural gas, a relatively clean-burning fuel, would limit the formation of VOC, PM10, and SO_2 emissions. Natural gas contains very little noncombustible gas or solid residues and a small amount of reduced sulfur compounds, including mercaptan. Water injection to the CTG combustors in conjunction with selective catalytic reduction (SCR) would be used to control NOx concentrations in the exhaust gas. Post-combustion NOx control would be provided using a selective catalytic reduction (SCR) system. The SCR system would use aqueous ammonia to further reduce NOx emissions to 2.5 parts per million by volume, dry (ppmvd) adjusted to 15% oxygen from the gas turbines/SCR systems. Ammonia slip would be limited to 5 ppmvd

at 15% oxygen on a dry basis. An oxidizing catalytic converter would be used to reduce the CO concentration in the exhaust gas emitted to the atmosphere to 6 ppmvd adjusted to 15% oxygen from the CTGs. Particulate emissions would be controlled using natural gas as the sole fuel for the CTG and inlet air filtration (OGE 2008a).

Two 80-foot-tall, 12.5-foot diameter stacks would release the CTG exhaust gas into the atmosphere. A continuous emission monitoring (CEM) system would be installed on the CTG stack to monitor fuel gas flow rate, NO_x and CO concentration levels, and percentage of oxygen in the flue gas to assure adherence with the proposed emission limits. The CEM system would generate reports of emissions data in accordance with permit requirements and send alarm signals to the plant's control room when the level of emissions approaches or exceeds pre-selected limits.

Project Operating Emissions

The majority of the criteria pollutant emissions would be generated from the operation of the two CTGs. The maximum controlled steady state operating emissions when running at full load for the CTGs is summarized in **Air Quality Table 15.**

Air Quality Table 15
Maximum Steady State Pollutant Emission Rates, lb/hr

Pollutant	ppmvd @ 15% O_2	Each CTG	Two CTGs
NOx	2.5	4.30	8.60
CO	6.0	6.12	12.24
VOC	2.0	1.25	2.50
PM10/PM2.5	---	3.00	6.00
SO_2 [a]	---	1.00	2.00
NH_3	5.0	3.01	6.02

Source: OGE 2008a, SDAPCD 2008c.
[a] SO_2 emissions are based on regulated maximum SDG&E natural gas sulfur content of 0.75 grains/100 dry standard cubic feet.

Air Quality Table 16 contains a summary of maximum hourly emissions per turbine resulting from the startup, shutdown, and uncontrolled steady-state operations. Startup period reflects 10 minutes of startup operation, 30 minutes of warm up, and 20 minutes of controlled steady state. Shutdown period reflects 52 minutes of controlled steady state and 8 minutes of shutdown operation. Startup/shutdown period reflects 10 minutes of startup, 30 minutes of controlled steady state, and 8 minutes of shutdown. Uncontrolled steady-state operations occur when the emission controls are not functioning during certain applicant requested maintenance operations. Operating load is set to be 100% for all cases to estimate the maximum emissions.

Air Quality Table 16
Maximum Short-Term Event Emissions

Short-Term Event	NO_x	CO	VOC	SO_x	PM10/PM2.5
Startup – 10 minutes (lbs)	3.00	5.60	1.10	0.14	--
Warm-up – 30 minutes (lbs)	10.93	7.50	1.11	0.41	--
Steady State Controlled - 20 minutes (lbs)	1.43	2.04	0.42	0.33	--
Startup Event Total (lbs/hr)	15.36	15.14	2.63	0.88	3.00
Steady State Controlled – 52 minutes (lbs)	3.73	5.31	1.08	0.87	--
Shutdown – 8 minutes (lbs)	2.20	3.70	0.60	0.11	--
Shutdown Event Total (lbs/hr)	5.93	9.01	1.68	0.98	3.00
Startup/Shutdown [a] (lbs/hr)	16.13	16.8	2.81	0.66	3.00
Uncontrolled Steady-State[b] (lbs/hr)	43.00	18.37	1.25	1.00	3.00

Source: OGE 2008a, SDAPCD 2008c.
[a] Assumes startup and shutdown occur in the same hour.
[b] This activity, requested by the applicant does not appear to be allowed by the District in the PDOC.

Air Quality Tables 17, 18, and 19 summarize the maximum estimated hourly, daily, and annual criteria pollutant emissions for the OGP based on maximum permitted operation[1]. To assess maximum hourly, daily, and annual emissions, the following assumptions were made for each case:

Maximum Hourly Emissions:

- Two turbines undergo startup operation for 10 minutes.
- Two turbines undergo warm-up operation for 30 minutes.
- Two turbines operate at steady state for 20 minutes.
- The fire water pump engine is tested for one-half hour.
- The black-start engine is tested for one-half hour.
- The cooling tower operates for a full hour at maximum water recirculation rate (8,500 gallons/minute), has a mist eliminator that reduces drift to 0.001% of the recirculation rate and the maximum water total dissolved solids content would be 4,594 ppm.

Maximum Daily Emissions:

- Two turbines undergo three startups per day.
- Two turbines undergo three shutdowns per day.
- Two turbines operate at controlled steady state for the balance of the day.
- The fire water pump engine is tested for one-half hour per day.
- The black-start engine is tested for one-half hour per day.
- The cooling tower operates at maximum water recirculation rate for 24 hours.

Permitted Maximum Annual Emissions:

[1] The maximum ammonia emissions are based on 6.02 lbs/hour for both turbines, where maximum daily is based on 24 hours/day (144.48 lbs/day) and maximum annual is based on 3,200 hours/year (9.63 tons/year).

- Two turbines undergo 250 startups/warm-ups per year (166.7 hours total).
- Two turbines undergo 250 shutdowns per year (33.3 hours total).
- Two turbines operate at controlled steady state for 3,000 hours.
- The fire water pump engine is tested for 52 hours per year.
- The black-start engine is tested for 7 hours per year.
- The cooling tower operates at maximum water recirculation rate for 3200 hours.

Air Quality Table 17
Summary of Maximum Hourly Operational Emissions[a], lbs/hr

	NO_x	CO	VOC	SO_x	PM10/PM2.5
Turbines	30.73	30.28	5.25	2.00	6.00
Black-Start Engine	1.39	1.85	0.31	0.008	0.04
Fire Water Pump Engine	1.58	0.31	0.0003	0.01	0.04
Chiller Cooling Tower	--	--	--	--	0.20
Water Trucks	0.64	0.14	0.03	0.002	0.07/0.03
Maximum Facility Hourly	34.34	32.58	5.59	1.79	6.49/6.45

Source: OGE 2008a, SDAPCD 2008c
[a] Assumes startup and shutdown occur in the same hour.

Air Quality Table 18
Summary of Maximum Daily Operational Emissions, lbs/day

	NO_x	CO	VOC	SO_x	PM10/PM2.5
Turbines	282.5	365.3	70.86	47.2	144
Black-Start Engine	1.39	1.85	0.31	0.008	0.04
Fire Water Pump Engine	1.58	0.31	0.0003	0.001	0.04
Chiller Cooling Tower	--	--	--	--	4.69
Water Trucks	15.30	3.31	0.76	0.05	1.75/0.71
Maximum Facility Daily	300.77	370.77	71.93	47.26	150.5/149.5

Source: OGE 2008a, SDAPCD 2008c

Air Quality Table 19
Summary of Maximum Annual Operational Emissions, ton/year

	NO_x	CO	VOC	SO_x	PM10/PM2.5
Turbines	16.93	22.56	4.45	3.17	9.60
Black-Start Engine	0.001	0.013	0.002	0.00006	0.0003
Fire-Pump Engine	0.041	0.008	0.00001	0.00003	0.001
Chiller Cooling Tower	--	--	--	--	0.313
Water Trucks	1.02	0.22	0.051	0.003	0.12/0.05
Maximum Facility Annual (ton/year)	17.99	22.80	4.50	3.17	10.03/9.96

Source: OGE 2008a, SDAPCD 2008c

The actual maximum annual operation is expected to be significantly less than that being permitted through SDAPCD. The applicant also acknowledges this fact and has provided an expected maximum operating basis to be used for California Environmental Quality Act (CEQA) mitigation. This expected maximum basis assumes maximum annual operations of 1,200 hours per year (TRC 2008f).

Air Quality Table 20 summarizes the applicant's expected estimate for the maximum annual emissions for the OGP[2]. The following assumptions were used by the applicant in determining the expected maximum annual emissions as follows:

Expected Maximum Annual Emissions:

- Two turbines undergo 100 startups/warm-ups (66.67 hours total).
- Two turbines undergo 100 shutdowns (13.33 hours total).
- Two turbines operate at controlled steady state for 1,120 hours.
- Water truck trips are reduced correspondingly with reduced turbine operations.
- Cooling tower operates for 1,200 hours.
- Emergency Engines operate the same as under maximum permit basis.

Air Quality Table 20
Applicant Estimated Maximum Annual Emissions (CEQA Mitigation Basis)[3], tons

	NO_x	VOC	SO_x	PM10
Turbines	6.43	1.68	0.40[b]	3.60
Black-Start Engine	0.01	0.00214	0.00006	0.00028
Fire Water Pump Engine	0.04	0.00001	0.00002	0.00097
Chiller Cooling Tower	--	--	--	0.12
Water Trucks	0.36	0.019	0.001	0.044
Maximum Facility Annually (ton/year)	6.86	1.70	0.40	3.76

Source: TRC 2008f
[a] Revised by staff assuming a reasonable long-term natural gas sulfur content of 0.25 grains/100 scf.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Staff assesses three kinds of impacts: construction, operation, and cumulative effects. As the name implies, construction impacts result from the emissions occurring during the construction of the project. The operation impacts result from the emissions of the proposed project during operation. Cumulative impacts analysis assesses the impacts that result from the proposed project's incremental effect viewed over time, together with other closely related past, present, and reasonably foreseeable future projects whose impacts may compound or increase the incremental effect of the proposed project. (Pub. Resources Code § 21083; Cal. Code Regs., tit. 14, §§ 15064(h), 15065(c), 15130, and 15355.) Additionally, cumulative impacts are assessed in terms of conformance with the District's attainment or maintenance plans.

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

Staff used two main significance criteria in evaluating this project. First, all project emissions of nonattainment criteria pollutants and their precursors (NOx, VOC, PM10

[2] The applicant originally proposed a 1,000 total hour basis, but is willing to stipulate to the same operating hours as recommended by staff for the Chula Vista Energy Upgrade Project's CEQA mitigation basis (CEC 2008o).

[3] CEQA mitigation for PM is based on PM10 emissions and no mitigation is recommended for CO since it is an attainment pollutant and the project would not impact the CO attainment status.

and SO_2) are considered significant and must be mitigated. Second, any AAQS violation or any contribution to any AAQS violation caused by any project emissions is considered to be significant and must be mitigated. For construction emissions, the mitigation that is considered is limited to controlling both construction equipment tailpipe emissions and fugitive dust emissions to the maximum extent feasible. For operating emissions, the mitigation includes both feasible emission controls (BACT) and the use of emission reduction credits to offset emissions of nonattainment criteria pollutants and their precursors.

The ambient air quality standards that staff uses as a basis for determining project significance are health-based standards established by the ARB and U.S. EPA. They are set at levels to adequately protect the health of all members of the public, including those most sensitive to adverse air quality impacts such as the aged, people with existing illnesses, children, and infants, including a margin of safety.

DIRECT/INDIRECT IMPACTS AND MITIGATION

While the emissions are the actual mass of pollutants emitted from the project, the impacts are the concentration of pollutants from the project that reach the ground level. When emissions are expelled at a high temperature and velocity through the relatively tall stack, the pollutants would be significantly diluted by the time they reach ground level. The emissions from the proposed project are analyzed through the use of air dispersion models to determine the probable impacts at ground level.

Air dispersion models provide a means of predicting the location and ground level magnitude of the impacts of a new emissions source. These models consist of several complex series of mathematical equations, which are repeatedly calculated by a computer for many ambient conditions to provide theoretical maximum offsite pollutant concentrations short-term (1-hour, 3-hour, 8-hour, and 24-hour) and annual periods. The model results are generally described as maximum concentrations, often described as a unit of mass per volume of air, such as micrograms per cubic meter ($\mu g/m^3$).

The applicant has used two models; EPA-approved American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) developed by the American Meteorological Society and Environmental Protection Agency for criteria pollutant modeling and HARP Version 1.3 software published by ARB for the health risk assessment. The AERMOD model is a steady-state Gaussian plume model which incorporates air dispersion based on planetary boundary layer turbulence structure and scaling concepts, including treatment of both surface and elevated sources, and both simple and complex terrain. Pollutants concentrations for a wide range of averaging times (from 1 hour to 1 year) can be estimated by this model. The HARP software, based on the EPA Industrial Source Complex Short Term Version 3 (ISCST3) air dispersion model, consists of an air emission inventory module, an air dispersion module and a risk evaluation module.

Staff added the applicant's modeled impacts to the available highest ambient background concentrations as shown in **Air Quality Table 10**. Staff then compared the results with the ambient air quality standards for each respective air contaminant to determine whether the project's emission impacts would cause a new violation of the ambient air quality standards or would contribute to an existing violation.

In general, the inputs for the modeling include stack information (exhaust flow rate, temperature, and stack dimensions), specific turbine emission data and meteorological data, such as wind speed, atmospheric conditions, and site elevation. For this project, the meteorological data used as inputs to the model included hourly wind speeds and directions measured at the Gregory Canyon Landfill site, which is the closest complete meteorological data source to the project site, and is meteorological data approved for use by the SDAPCD.

Construction Impacts and Mitigation

The following section discusses the project's short-term direct construction ambient air quality impacts, as estimated by the applicant, and provides a discussion of appropriate mitigation. Staff reviewed the construction emissions estimates and air dispersions modeling procedures and considers them to be adequate and generally conservative for this siting case.

Construction Impact Analysis

The applicant modeled the emissions of the OGP on-site construction using the latest version of EPA's approved air dispersion modeling system, AERMOD (Version 07026).The fuel combustion emissions from construction equipment and the fugitive dust emissions were modeled as four volume sources and 13 distinct volume sources respectively.

For the determination of one-hour average construction NOx concentrations the applicant used an Ozone Limiting Method (OLM) Calculation that multiplied the maximum modeled NOx value by the assumed initial NO_2/NOx ratio of 0.1 for diesel equipment and added the conversion of NO to NO_2 based on the background ozone concentration that corresponded to the maximum NOx impact hour.

To determine the construction impacts on short-term ambient standards (i.e. 1-hour through 24 hours) the worst-case daily on-site construction emission levels shown in **Air Quality Table 11** were modeled. **Air Quality Table 21** provides the results of modeling analysis for the criteria pollutants during different averaging time period. Typical construction activities would occur from 7:00am to 5:30pm, however, modeling assumed a 12-hour workday to be conservative. (OGE 2008a).

Air Quality Table 21
OGP Construction Impacts, (µg/m3)

Pollutant	Averaging Period	Project Impact (µg/m^3)	Background (µg/m^3) [b]	Total Impact (µg/m^3)	Limiting Standard (µg/m^3)	Type of Standard	Percent of Standard
NO_2 [a]	1 hour	79.3	143.1	222.4	339	CAAQS	66%
	Annual	0.56	32.3	32.9	57	CAAQS	58%
PM10	24 hour	8.28	57	65.3	50	CAAQS	131%
	Annual	0.31	24.2	24.5	20	CAAQS	123%
PM2.5	24 hour	1.06	37.7	38.8	35	NAAQS	111%
	Annual	0.088	12	12.1	12	CAAQS	101%
CO	1 hour	170.7	6,785	6,956	23,000	CAAQS	30%
	8 hour	27.3	4,011	4,038	10,000	CAAQS	40%
SO_2	1 hour	0.33	94.3	94.6	655	CAAQS	14%
	3 hour	0.13	84.9	85.0	1,300	NAAQS	7%
	24 hour	0.017	23.6	23.6	105	CAAQS	22%
	Annual	0.0007	10.7	10.7	80	NAAQS	13%

Source (OGE 2008a)
[a] One-hour NOx value was determined using Ozone Limiting Method calculation. Staff adjusted the annual value by multiplying by the Annual NOx Ratio Method (ARM) U.S. EPA default value of 0.75.
[b] Background values have been adjusted per staff recommended background concentrations shown in AIR QUALITY Table 10.

As can be seen from the modeling results provided in **Air Quality Table 21**, the construction impacts have the potential to worsen the existing violations of the PM10 and PM2.5 ambient air quality standards and are, therefore, potentially significant. The applicant's construction modeling analysis indicates that the maximum NOx, CO and SO_2 impacts would remain below the CAAQS and NAAQS.

The maximum construction impacts occur at the property fence line. The maximum residential receptor impacts would be considerably lower due to the distance to the nearest residential receptor.

Construction Mitigation

Staff recommends that construction emission impacts be mitigated to the greatest feasible extent including all required measures from the District's rules and regulations, as well as other measures considered necessary by staff to fully mitigate the construction emissions. The District is currently in the process of creating a fugitive dust control rule (Rule 55) patterned on the recently promulgated Ventura County Air Pollution Control District fugitive rule, which may be approved and in force prior to the project starting or completing construction activities. However, the District has indicated that the Energy Commission conditions, as reviewed from other similar projects, would require control measures that would be as strict as or stricter than the anticipated requirements of District Rule 55 (Hamilton 2008).

Applicant's Proposed Mitigation

The applicant also has proposed most of the onsite mitigation monitoring, monthly reporting, and fugitive dust mitigation measures generally proposed by staff, and as

recommended by staff for this case as Conditions of Certification **AQ-SC1** through **AQ-SC4** (OGE 2008a, p 20-23). The applicant has also proposed construction equipment mitigation that relies on pollution control retrofit for older construction equipment as required by ARB's Regulation for In-Use Off-Road Diesel Vehicles[4]. Other applicant proposed construction equipment mitigation measures, such as idle control, proper maintenance and use of California low sulfur diesel fuel (OGE 2008a, p 23-24).

Adequacy of Proposed Mitigation

The applicant's proposed mitigation monitoring, monthly reporting, and fugitive dust mitigation measures are almost identical to those generally proposed by staff, so they are with minor modifications considered adequate. However, the construction equipment mitigation measure's reliance on the ARB regulation that cover's equipment fleet manufacturer's average fleet composition does not regulate equipment at a specific project site. Therefore, staff does not believe that this approach would provide an assurance of adequate mitigation at the project site. The modeling analysis shows that the mitigated construction PM10 impacts are predicted to be potentially significant beyond the project fence line and the construction activities also emit precursors of the non-attainment pollutant ozone. Therefore, staff believes that all reasonable feasible construction emission mitigation measures are needed to mitigate the potentially significant construction PM10 and ozone impacts.

Staff Proposed Mitigation

Staff recommends construction emission mitigation measures that are nearly identical to the mitigation monitoring, monthly reporting, and fugitive dust mitigation measures proposed by the applicant (**AQ-SC1** to **AQ-SC4**), and an additional construction equipment mitigation measure to assure maximum feasible equipment exhaust emissions control (**AQ-SC5**).

Staff recommends **AQ-SC1** to require the applicant to have an on-site construction mitigation manager who would be responsible for the implementation and compliance of the construction mitigation program. The documentation of the ongoing implementation and compliance with the construction mitigation program would be provided in the monthly construction compliance report that is required in staff's recommended Condition of Certification **AQ-SC2**.

Staff's recommended fugitive dust mitigation measures (**AQ-SC3** and **AQ-SC4**) generally incorporate the applicant's proposed fugitive dust mitigation measures.

Staff recommends Condition of Certification **AQ-SC5** to mitigate the NOx and PM emissions from the large diesel-fueled construction equipment. This condition requires the use of U.S. EPA/ARB Tier 2 engine compliant equipment for equipment over 100 horsepower where available and a good faith effort to find and use available U.S. EPA/ARB Tier 3 engine compliant equipment over 100 horsepower. The Condition also includes equipment idle time restrictions and engine maintenance provisions. The Tier 2 standards include engine emission standards for NOx plus non-methane hydrocarbons, CO, and PM emissions, while the Tier 3 standards further reduce the NOx plus non-

[4] http://www.arb.ca.gov/msprog/ordiesel/ordiesel.htm.

methane hydrocarbons emissions. The Tier 2 and Tier 3 standards became effective for engine/equipment model years 2001 to 2003 and models years 2006 to 2007, respectively, for engines between 100 and 750 horsepower.

Operation Impacts and Mitigation

The following section discusses the project's direct ambient air quality impacts, as estimated by the applicant, and evaluated by staff. Additionally, this section discusses the recommended mitigation measures.

The applicant performed direct impact modeling analyses, including operations, fumigation, and initial commissioning impact modeling.

Operational Modeling Analysis

Several combinations of operating conditions were evaluated to determine the maximum short-term operating impacts for the facilities. These included combinations of start/stop emission hours for the turbines and normal operation using 50, 75 and 100% load stack parameters (temperature and velocity, etc.). All of these modeling scenarios included representative emission from the auxiliary equipment (cooling tower and emergency engines).

The following short-term operating conditions were found to indicate the maximum short-term emission impacts for each pollutant.

For NOx:

100% base load for both turbines

For CO:

50% Load Start/Stop Mode for both turbines

For PM2.5, PM10, and SO_2:

100% base load for both turbines

In the case of NOx emission impacts the emergency engines, rather than the gas turbines, were the main contributor of the 1-hour short-term impacts.

AERMOD (Version 07026) and the meteorological data provided by SDAPCD were used for the modeling analysis. The applicant's predicted maximum concentrations of the non-reactive pollutants for the Orange Grove project are summarized in **Air Quality Table 22.**

Air Quality Table 22
OGP Maximum Operating Impacts, (μg/m^3)

Pollutant	Averaging Period	Project Impact (μg/m^3)	Background (μg/m^3) [a]	Total Impact (μg/m^3)	Limiting Standard (μg/m^3)	Type of Standard	Percent of Standard
NO_2 [b]	1 hour	58.3	143.1	201.4	339	CAAQS	59%
	annual	0.35	32.3	32.7	57	CAAQS	57%
PM10[c]	24 hour	2.95	57	60.0	50	CAAQS	120%
	annual	0.26	24.2	24.5	20	CAAQS	123%
PM2.5[c]	24 hour [d]	2.12	37.7	39.8	35	NAAQS	114%
	annual	0.26	12	12.3	12	CAAQS	103%
CO	1 hour	109	6,785	6,894	23,000	CAAQS	30%
	8 hour	22	4,011	4,033	10,000	CAAQS	40%
SO_2 [c]	1 hour	6.7	94.3	101.0	655	CAAQS	15%
	3 hour	3.6	84.9	88.5	1,300	NAAQS	7%
	24 hour	0.94	23.6	24.5	105	CAAQS	23%
	annual	0.082	10.7	10.8	80	NAAQS	13%

Source: (OGE 2008a).
[a] Background values have been adjusted per staff recommended background concentrations shown in **AIR QUALITY Table 10**.
[b] One-hour NOx value was determined using Ozone Limiting Method calculation. Staff adjusted the annual value by multiplying by the Annual NOx Ratio Method (ARM) U.S. EPA default value of 0.75.
[c] The PM10 and PM2.5 modeling results have been corrected following the change of the base load PM10 emission factor of 2.7 lbs/hour to 3.0 lbs/hour. This resulted in the modeled vs. permitted gas turbine particulate emissions increasing from 132.8 lbs/day to 144 lbs/day and from 8.78 tons/year to 9.6 tons per year. The ratio of these pollutant corrections were used to update the PM10 and PM2.5 modeling results.
[d] The PM2.5 results are the high eighth high value to represent the 98th percentile impact that correspond to the 98th percentile ambient air quality standard and background concentration. The PDOC provides a somewhat different value for this impact (2.53 μg/m^3).

The applicant's modeling results indicate that the project's normal operational impacts would not create violations of NO_2, SO_2, or CO standards, but could further exacerbate violations of the PM10 and PM2.5 standards. In light of the existing PM10 and PM2.5 non-attainment status for the project site area, staff considers the modeled impacts to be significant and, therefore, require mitigation.

Initial Commissioning Short-Term Modeling Impact Analysis

The applicant presented several initial commissioning activities that would occur prior to meeting normal emission limits. The worst case conditions for the short-term NOx and CO impacts, as provided in the discussion prior to and after **Air Quality Tables 13**, were determined and modeled (OGE 2008a). The initial commissioning activities are limited to only one unit at a time operating without fully functioning emission controls. The AERMOD model was used for the commissioning impact analysis. Total of 35 cases of turbine operating conditions were evaluated to determine the worst-case emissions as shown in **Air Quality Table 23**.

Air Quality Table 23
OGP Maximum Short-Term Initial Commissioning Impacts, (µg/m^3)

Pollutant	Averaging Period	Project Impact (µg/m^3)	Background (µg/m^3) [a]	Total Impact (µg/m^3)	Limiting Standard (µg/m^3)	Type of Standard	Percent of Standard
NO_2[b]	1 hour	70.9	143.1	214	339	CAAQS	63%
CO	1 hour	99.7	6,785	6,885	23,000	CAAQS	30%
	8 hour	20.4	4,152	4,172	10,000	CAAQS	42%

Source: (OGE 2008a).
[a] Background values have been adjusted per staff recommended background concentrations shown in **AIR QUALITY Table 10**.
[b] One-hour NOx value was determined using Ozone Limiting Method calculation.

These modeling results indicate that no significant short-term impacts would occur during initial commissioning.

Fumigation Impact Analysis

Short-term impacts from fumigation can occur when the sun first rises, where the air at ground level is heated, resulting in a vertical (both rising and sinking air) mixing of air for a few hundred feet or so. Emissions from a stack that enter this vertically mixed layer of air would also be vertically mixed, bringing some of those emissions down to the ground level. The applicant did not model the potential for fumigation impacts using the SCREEN3 model; however, based on past modeling analyses for stacks with high temperature and high velocity such as the OGP, fumigation impacts would be less than the worst-case short-term impacts predicted by AERMOD. For example, the nearly identical Chula Vista Energy Upgrade Project (CVEUP) did model fumigation impacts and found that they were considerably lower than the maximum impacts determined by AERMOD (CEC 2008o, p. 4.1-36). The fumigation modeling results for this project would be very similar to that performed for CVEUP; therefore, the short-term fumigation impact potential would be less than significant.

Chemically Reactive Pollutant Impacts

Ozone Impacts

The project's gaseous emissions of NOx, SO_2, VOC, and ammonia can contribute to the formation of secondary pollutants: ozone and PM10/PM2.5.

There are air dispersion models that can be used to quantify ozone impacts, but they are used for regional planning efforts where hundreds or even thousands of sources are input into the modeling to determine ozone impacts. There are no regulatory agency models approved for assessing single source ozone impacts. However, because of the known relationship of NOx and VOC emissions to ozone formation, it can be said that the emissions of NOx and VOC from the OGP do have the potential (if left unmitigated) to contribute to higher ozone levels in the region. These impacts would be cumulatively significant because they would contribute to ongoing violations of the state and federal ozone ambient air quality standards.

PM2.5 Impacts

Secondary particulate formation, which is assumed to be 100% PM2.5, is the process of conversion from gaseous reactants to particulate products. The process of gas-to-

particulate conversion, which occurs downwind from the point of emission, is complex and depends on many factors, including local humidity and the presence of air pollutants. The basic process assumes that the SOx and NOx emissions are converted into sulfuric acid and nitric acid first and then react with ambient ammonia to form sulfate and nitrate. The sulfuric acid reacts with ammonia much faster than nitric acid and converts completely and irreversibly to particulate form. Nitric acid reacts with ammonia to form both a particulate and a gas phase of ammonium nitrate. The particulate phase will tend to fall out; however, the gas phase can revert back to ammonia and nitric acid. Thus, under the right conditions, ammonium nitrate and nitric acid establish a balance of concentrations in the ambient air. There are two conditions that are of interest, described as *ammonia rich* and *ammonia poor*. The term ammonia rich indicates that there is more than enough ammonia to react with all the sulfuric acid and to establish a balance of nitric acid-ammonium nitrate. Further ammonia emissions in this case would not necessarily lead to increases in ambient PM2.5 concentrations. In the case of an ammonia poor environment, there is insufficient ammonia to establish a balance and thus additional ammonia would tend to increase PM2.5 concentrations.

The San Diego Air Basin has not undergone the rigorous secondary particulate studies that have been performed in other areas of California, such as the San Joaquin Valley, that have more serious fine particulate pollution problems. However, the available chemical characterization data shows that the annual ammonium nitrate and ammonium sulfate fine particulate concentrations in Escondido and San Diego range from approximately 50-60% of the state annual ambient standard (ARB 2005). Because of the known relationship of NOx and SOx emissions to PM2.5 formation, it can be said that the emissions of NOx and SOx from the OGP do have the potential (if left unmitigated) to contribute to higher PM2.5 levels in the region.

Additionally, there would certainly be some secondary particulate conversion from the ammonia emitted from the OGP project; however, there is currently no regulatory model that can predict the conversion rate. Therefore, it is recommended that ammonia emissions be limited to the extent feasible, while ensuring that the selective catalytic reduction unit maintains NOx emissions below the required controlled concentration limit of 2.5 ppm.

The applicant is proposing to mitigate the project's NOx, VOC, SO_2, and PM10 emissions through the use of BACT and emission reduction strategies and limit the ammonia slip emissions to 5 ppm. The applicant proposes to provide total NOx, VOC, SO_2, and PM10 reductions at a minimum 1:1 ratio, and the ammonia slip concentration level matches the lowest level proposed in California for a peaking power project. With the proposed emission offsets and ammonia slip limit, it is staff's belief that the project would not cause significant secondary pollutant impacts.

Operations Mitigation

Applicant's Proposed Mitigation

Emission Controls

As discussed in the **Project Description** section, the applicant proposes to employ water injection, SCR with ammonia injection, and CO catalyst and operate exclusively

on pipeline-quality natural gas to limit turbine emission levels (OGE 2008a). The applicant has proposed the following BACT emission limits, each for the two CTGs:

- NOx: 2.5 ppmvd at 15% O_2 (one-hour average, excluding startup/shutdown) and 4.30 lb/hr
- CO: 6.0 ppmvd at 15% O_2 (three-hour rolling average, excluding startup/shutdown) and 6.12 lb/hr
- VOC: 2.0 ppmvd at 15% O_2 (one-hour rolling average, excluding startup/shutdown) and 1.25 lb/hr
- PM10: 2.7 lb/hr (as proposed by the applicant, the PDOC assumes 3.0 lb/hr)
- SO_2: 1.0 lb/hr with fuel sulfur content of 0.75 grains/100 standard cubic feet (scf)
- NH_3: 5 ppmvd at 15% O_2 and 3.01lb/hr

For the chiller cooling tower a mist eliminator with a 0.001% control efficiency is proposed.

For the emergency fire pump engine a diesel engine meeting U.S.EPA/ARB Tier 2 Nonroad Diesel Engine Emission Standards is proposed. For the black-start engine a rich-burn natural gas engine is proposed. The proposed emission guarantees for the two emergency engines are as follows.

Air Quality Table 24
Proposed Emergency Engine Emission Rates [a]

Pollutant	Fire Pump Engine		Black-Start Engine	
	g/bhp	Lb/test[b]	g/bhp	Lb/test[b]
NOx	3.84	1.58	1.50	1.39
CO	0.746	0.31	2.00	1.85
VOC	0.0007	0.0003	0.33	031
PM10/PM2.5	0.091	0.04	0.010[c]	0.04

From OGE 2008a.
[a] SO_2 emissions do not have emission guarantees and are based on the use of California low sulfur content diesel fuel (15 ppm sulfur) for the fire pump engine and pipeline natural gas for the black-start engine.
[b] The test duration for both engines is one half hour in duration.
[c] Emission factor is based on lbs/MMBtu.

Emission Offsets

District Rule 20 requires offsets when NOx or VOC emissions exceed 50 tons per year. The emissions from this project would be permitted at levels well below the District offset threshold.

Energy Commission staff has long held that emission reductions need to be provided for all nonattainment pollutants and their precursors at a minimum 1:1 ratio of annual operating emissions. For this project, the District's regulations would not require any offset mitigation. The applicant has agreed to funding emission reductions through the Carl Moyer Fund or similar mechanism as proposed by staff for the Chula Vista siting case (CEC 2008o). The applicant's amended proposal includes a determination of the new project emissions based on the new facility's potential to emit given a maximum

expected operations of 1,200 operating hours per year that includes 200 startup and shutdown events. The applicant's amended offset proposal is as follows (TRC 2008f):

- Total calculated emission increase of 12.72 tons (total of NOx, VOC, PM, and SOx emissions), which includes the water truck emissions;
- Fund the Carl Moyer program at a rate of $16,000 per ton with a 20% additional administration fee.

Using this basis, the total emission reduction funding proposed by the applicant is $244,224.

Adequacy of Proposed Mitigation

Staff concurs with the District's determination that the project's proposed emission controls/emission levels for criteria pollutants and ammonia slip meets BACT requirements and that the proposed emission levels are reduced to the lowest technically feasible levels.

Staff has made a preliminary determination that the applicant's amended offset proposal approach, which is a stipulation to the general approach recommended for the Chula Vista Energy Upgrade Project, meets CEQA mitigation requirements. Staff's acceptance of this offset package was determined solely based on the merits of this case, consideration of the region's local ambient air quality and expected attainment timelines, the project's expected operation and resulting emission limits, and the specific form of emission reductions proposed and does not in any way provide a precedent or obligation for the acceptance of offset proposals for any other current or future licensing case.

Staff has determined that the proposed emission controls and emission levels, along with the proposed emission offset package, mitigate all project air quality impacts to less than significant.

Staff has considered the minority population surrounding the site (see **Socioeconomics** Figure 1). Since the project's direct air quality impacts have been reduced to less than significant, there is no environmental justice issue for air quality.

Staff Proposed Mitigation

Staff is proposing Condition of Certification **AQ-SC6** to formalize the applicant's amended emission offset proposal.

Staff evaluated the applicant's original proposal's assumption for likely maximum annual operation, 1,000 hours or a capacity factor of 11.4%, and found data to support using a reduced capacity factor in this general range given the historical capacity factors and the worst-case forecast capacity factors for SDG&E service area peaker facilities. The historical capacity factors, for peaker power plants built after the year 2000, found in a review of the Energy Commission's Quarterly Fuel and Energy Reporting data and available SDAPCD 2005 and 2006 data (Moore 2008) show generation or hour-based capacity factors that have not exceeded 8.4% for any single facility. The historical capacity factor data reviewed is provided in **Air Quality Table 25**.

Air Quality Table 25
Historical Capacity Factors for Comparable SDG&E Service Area Peaker Facilities

	QFER Generation Based Capacity Factor					
Facility Name	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Calpeak Border	7.77%	2.71%	2.28%	1.86%	1.43%	8.39%
Calpeak Enterprise	7.53%	2.18%	2.35%	1.55%	1.24%	5.76%
Larkspur	1.18%	4.01%	4.74%	3.85%	2.89%	6.00%
	SDAPCD Hours of Operation Capacity Factor					
Facility Name	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Calpeak Border	---	---	---	2.29%	1.72%	---
Calpeak Enterprise	---	---	---	1.91%	1.49%	---
Calpeak El Cajon	---	---	---	2.64%	2.26%	---
Miramar Energy Facility	---	---	---	1.69%	1.84%	---
Larkspur	---	---	---	4.41%	3.51%	---

Source: Energy Commission QFER data; Moore 2008

The most comparable facility to the OGP is Larkspur as it is also comprised of two LM6000 gas turbines.

Staff also reviewed the worst-case SDG&E service area peaker capacity factors forecast in the Scenario Analysis of California's Electricity System performed for the *2007 Integrated Energy Policy Report* (CEC 2007a). The worst-case generation based capacity factors for the existing and named peakers for 2009 to 2020 range from 5.7 - 10.5%. It is important to note that the generation based capacity factors could be lower than emission based capacity factors due to higher proportional emissions during reduced load conditions and start/shut-down periods. Using these historic and forecast capacity factor data sources and considerations regarding emissions versus generation or hourly operation capacity factors, staff has determined that a 13.7% annual capacity factor, or 1,200 hours of operation, with two hundred startup and two hundred shutdown events, would provide a reasonable safety margin for the determination of CEQA emission mitigation requirements for this project. This is similar to, but somewhat higher than, 1,000 hours originally proposed by the applicant. The applicant has stipulated to agreeing to staff's offset proposal (TRC 2007f).

Staff also believes that the mitigation fee basis should be tied to ARB's latest Carl Moyer Program Guideline[5] cost effectiveness cap value. The draft ARB 2008 cost effectiveness cap value is $16,000 per ton (ARB 2008d). **AQ-SC7** is written to allow flexibility should the final cost effectiveness cap value change from the draft value. Additionally, **AQ-SC7** has also been designed to allow other public agency administered

[5] The ARB Carl Moyer Web page has the following description of the program: "The Carl Moyer Memorial Air Quality Standards Attainment Program provides incentive grants for cleaner-than-required engines, equipment and other sources of pollution providing early or extra emission reductions. Eligible projects include cleaner on-road, off-road, marine, locomotive and stationary agricultural pump engines, as well as forklifts, airport ground support equipment, and auxiliary power units. The program achieves near-term reductions in emissions of oxides of nitrogen (NOx), particulate matter (PM), and reactive organic gas (ROG) which are necessary for California to meet its clean air commitments under the State Implementation Plan Program funds" (ARB 2008e).

emission mitigation fee programs or traditional emission reduction credits (ERCs) from the District bank to be used to meet the emission mitigation requirement of the condition.

Staff would like to note that the CEQA mitigation basis includes a rather significant safety factor, namely the difference between the project's actual emissions and its proposed maximum emissions. The actual emissions from a LM6000 gas turbine would be some fraction of the permitted maximum emissions. Some pollutants are emitted near their permitted emission rate, such as NOx, while others tend to be much lower than their permitted emission rate, such as VOC and CO. **Air Quality Table 26** provides a comparison of the OGP permitted emission rates and an expected actual range of emissions and average normal hourly operating emissions for two LM6000 gas turbines based on a compilation of source test results (from four separate sites with LM6000PC Sprint gas turbines), and the expected safety factor for each pollutant.

Air Quality Table 26
Comparison of Actual and Permitted Emissions for OGP and Existing Turbines

	Pollutant lb/hr Normal Operations [a] or % as appropriate			
Emission Source	**NOx**	**VOC**	**CO**	**PM10/2.5**
OGP LM6000 Permitted Emissions (both Turbines)	8.6	2.5	12.2	5.4
Existing LM6000 Two Turbine Actual Emissions Range [b]	NR	0.11-1.8	0.93-4.5	0.72-4.9
Existing LM6000 Two Turbine Actual Emissions Average [c]	NR	0.72	2.5	2.3
Existing LM6000 Source Tests –% of Permit Level [c]	65%	30%	25%	38%
Expected OGP Permitted Emissions Safety Margin [d]	15%	70%	75%	50%
Expected Long-Term OGP Normal Operating Emissions	7.3	0.75	3.1	2.7

Sources: OGE 2008a for OGE permitted emissions and staff summary and analysis of existing LM6000PC Sprint gas turbine source test data for the Hanford, Henrietta, Los Esteros, and Donald Von Raesfeld facilities.
NR – Not representative. The NOx emission concentration limits for the four projects surveyed are different than the proposed OGP project so the mass emission rate is not representative. The percent of permit level however has been determined.
a – SOx emissions safety factor is the difference between the natural gas sulfur content used in the mitigation emission calculations (0.25 grains/100 scf) and the expected long-term fuel sulfur content, which is expected to be less than half of the assumed value.
b – Lowest and highest source test values from 10 LM6000PC Sprint gas turbines.
c – Average values from source tests from 10 LM6000 PC Sprint gas turbines.
d – Safety factor for NOx is conservatively assumed to be approximately one-half what would occur if the facility were to meet the average percent of permit level found for the four surveyed sources due to the lower concentration limit required for OGP.

Air Quality Table 26 shows that the actual emissions from the new LM6000 turbines are expected to be quite a bit lower than the permitted emissions, particularly for CO, VOC, and PM10 emissions, which provides a margin of safety for staff's proposed mitigation level.

Staff is proposing Condition of Certification **AQ-SC8** to ensure that the initial commissioning operations of the OGP are conducted in the 7 am to 7 pm hours stipulated by the applicant. The applicant has stipulated to this condition which limits the potential for air quality impacts not described in the applicant's modeling analysis, which assumed that commissioning would only occur between 7 am to 7 pm.

Staff is proposing Condition of Certification **AQ-SC9** and **AQ-SC10** to provide the chiller cooling tower mist eliminator performance standard and to require the applicant to conduct cooling tower water testing and provide emission reporting that are not required in the SDAPCD conditions, respectively.

Staff is proposing Conditions of Certification **AQ-SC7** and **AQ-SC11** that would ensure that the license is amended as necessary to incorporate changes to the air quality permits and ensure ongoing compliance through the requirement of quarterly reports.

Staff is proposing Condition of Certification **AQ-SC12** to formalize the applicant's stipulation to buy new water delivery trucks and to ensure that they will be properly maintained to minimize water trucking emissions.

CUMULATIVE IMPACTS

Cumulative impacts are defined as "two or more individual effects which, when considered together, are considerable or . . . compound or increase other environmental impacts" (CEQA Guidelines § 15355). "A cumulative impact consists of an impact that is created as a result of a combination of the project evaluated in the EIR together with other projects causing related impacts" (CEQA Guidelines § 15130[a][1]). Such impacts may be relatively minor and incremental, yet still be significant because of the existing environmental background, particularly when one considers other closely related past, present, and reasonably foreseeable future projects.

This analysis is primarily concerned with "criteria" air pollutants. Such pollutants have impacts that are usually (though not always) cumulative by nature. Rarely will a project cause a violation of a federal or state criteria pollutant standard. However, a new source of pollution may contribute to violations of criteria pollutant standards because of the existing background sources or foreseeable future projects. Air districts attempt to attain the criteria pollutant standards by adopting attainment plans, which comprise a multi-faceted programmatic approach to such attainment. Depending on the air district, these plans typically include requirements for air offsets and the use of best available control technology for new sources of emissions and restrictions of emissions from existing sources of air pollution.

Much of the preceding discussion is concerned with cumulative impacts. The "Existing Ambient Air Quality" subsection describes the air quality background in the San Diego Air Basin, including a discussion of historical ambient levels for each of the significant criteria pollutants. The "Construction Impacts and Mitigation" subsection discusses the project's contribution to the local existing background caused by project construction. The "Operation Impacts and Mitigation" subsection discusses the project's contribution to the local existing background caused by project operation. The following subsection includes four additional analyses:

- a summary of projections for criteria pollutants by the air district and the air district's programmatic efforts to abate such pollution;
- an analysis of the project's *localized cumulative impacts*, the project's direct operating emissions combined with other local major emission sources;

Summary of Projections

The SDAPCD is the lead agency for managing air quality and coordinating planning efforts for San Diego County and the San Diego Air Basin, so that the federal 8-hour ozone standard is attained in a timely fashion and attainment with CO standards are maintained. The District is responsible for developing those portions of the State Implementation Plan (SIP) and the Air Quality Management Plan (AQMP), that deal with certain stationary and area source controls and, in cooperation with the transportation planning agencies, the development of transportation control measures. Additionally, the SDAPCD is responsible for providing plans for attaining the California ozone standard and for reducing particulate (PM10 and PM2.5) emissions in compliance with Senate Bill 656 (Sher, Chapter 738, Statutes of 2003). In this role, the SDAPCD is the agency with principal responsibility for analyzing and addressing cumulative air quality impacts, including the impacts of ambient ozone, particulate matter, and CO. The District has summarized the cumulative impacts of ozone, particulate matter, and CO on the air basin from the broad variety of its sources. Analyses of these cumulative impacts, as well as the measures the District proposes to reduce impacts to air quality and public health, are summarized in six publicly available documents. These adopted air quality plans are summarized below.

- Eight-Hour Ozone Attainment Plan (federal 8-hour ozone attainment plan)
  Link: http://www.sdapcd.org/planning/8-Hour-Ozone-Attainment-Plan.pdf
- Air Resources Board's Proposed State Strategy for California's 2007 State Implementation Plan (federal 8-hour ozone attainment plan)
  Link: http://www.arb.ca.gov/planning/sip/2007sip/2007sip.htm
- Ozone Redesignation Request and Maintenance Plan (federal 1-hour ozone maintenance plan)
  Link: http://www.sdapcd.org/planning/RedesigPlan.pdf
- 2004 Revision to the California State Implementation Plan for Carbon Monoxide (federal CO maintenance plan)
  Link: http://www.arb.ca.gov/planning/sip/co/final_2004_co_plan_update.pdf
- 2004 Triennial Revision of the Regional Air Quality Strategy for San Diego County (state ozone attainment plan)
  Link: http://www.sdapcd.org/planning/RAQS-04.pdf
- Measures to Reduce Particulate Matter in San Diego County (Health and Safety Code 39614)
  Link: http://www.sdapcd.org/planning/SB656StaffRpt.pdf

The final 8-hour ozone attainment plan for San Diego County was submitted by the state in the ARB *Proposed State Strategy for California's 2007 State Implementation Plan* document in late 2007. This plan has not been approved by U.S. EPA, so the approved 1-hour plan is the currently approved ozone attainment plan for San Diego County. The 2007 State Implementation Plan, when approved by U.S. EPA, will become the ozone attainment plan for the District.

Eight-Hour Ozone Attainment Plan and Air Resources Board's Proposed State Strategy for California's 2007 State Implementation Plan

The District's Eight-Hour Ozone Attainment plan relies strongly on existing control measures included in District rules and regulations. The ARB's state proposed strategy for the State Implementation Plan relies primarily on existing control measures, as well as tightening vehicle emissions (both on- and off-road vehicles) and emissions from other transportation sources, pesticides, and consumer products. No new control strategies that are directly applicable to the project are noted in either of these two ozone planning documents. Indirectly, the on-road and off-road control measures would regulate some of the delivery vehicles and construction equipment used during the projects construction and operation. U.S. EPA has not yet approved the 8-hour ozone attainment plan for California.

Ozone Redesignation Request and Maintenance Plan

This plan was prepared after the SDAB came into compliance with the federal 1-hour ozone standard in December 2002. U.S. EPA approved this plan and redesignated the San Diego Air Basin as attainment with the 1-hour standard effective July 28, 2003. The specific control measures included in the approved 1-hour ozone maintenance plan are those that were approved for the nonattainment State Implementation Plan (SIP), and no new measures were proposed. The existing measures from the previously approved SIP are included in the District's rule and regulations and ARB vehicle emission regulations. Therefore, compliance with these rules and regulations would ensure that the project conforms to the 1-hour ozone maintenance plan.

While the San Diego area is no longer subject to the revoked federal 1-hour ozone standard, the 8-hour ozone plan has not yet been approved by U.S. EPA, so this plan is the currently approved ozone plan for San Diego County.

2004 Revision to the California State Implementation Plan for Carbon Monoxide

The Carbon Monoxide Maintenance Plan applies to 10 separate areas in California that attained the federal CO standards in the 1990s, including the San Diego area. This plan does not include any further measures or requirements that would specifically relate to the project's direct and indirect emission sources. This plan relies on current motor vehicle programs to ensure that attainment with the federal CO standards is maintained.

The project's construction and operation were not found to cause any new exceedances of the carbon monoxide ambient air quality standards (CO AAQS). The project's generated traffic would be insignificant in comparison with the existing San Diego County traffic, and the project's primary emission sources normally emit CO concentrations out of the stack that are below the federal ambient air quality standards. Therefore, the project would not impact the Carbon Monoxide Maintenance Plan.

2004 Triennial Revision of the Regional Air Quality Strategy for San Diego County

This plan is prepared to determine progress and measures needed to attain California Ambient Air Quality Standards (CAAQS) for ozone, carbon monoxide, nitrogen dioxide, and sulfur dioxide. San Diego County is in attainment with all of these state standards except ozone. This plan describes the extent of ozone air quality improvement during

the previous three years, provides a discussion of actual versus forecasted emission rates, and evaluates the need for further control measures in order to achieve attainment with the state ozone ambient air quality standards. None of the measures determined for further study in this document would apply to the proposed project.

The draft triennial plan was completed in August 2008, but is has not yet been officially approved (SDAPCD 2008d). None of the emission reduction measures proposed in the draft document, which includes a Best Available Retrofit Control Technology (BARCT) measure for existing older peaker turbines and a control measure for small boilers (less than 5 million Btu/hr heat input), would impact the new gas turbines and internal combustion engines that would be installed as part of this project.

Measures to Reduce Particulate Matter in San Diego County

This plan, completed in December 2005, analyzed potential particulate control measures, listed by ARB, as required by Health and Safety Code 39614. The SDAPCD's review indicated that 59 of these ARB measures were already included in existing District rules and regulations, that 25 of these control measures would not significantly reduce particulate emissions in San Diego County, and that 19 of these control measures could have cost effective particulate reductions. The District will evaluate these 19 control measures further and will propose new regulations, or non regulatory programs, for consideration of the District Board, if appropriate. Of these 19 control measures, there are eight fugitive dust control measures that could be applicable to the project's construction activities, including earthmoving, demolition, grading, carryout and trackout, unpaved staging areas, and windblown dust controls. The District has not yet promulgated any regulations for fugitive dust control; however, a fugitive dust rule is planned to be promulgated prior to the end of the project's construction. Staff's proposed fugitive dust control measures (Conditions of Certification **AQ-SC3** and **AQ-SC4**) require stringent emission control measures for all of the applicable fugitive dust sources that are identified for further study in this planning document and that are likely to be included in the District's future fugitive dust control rule.

Summary of Conformance with Applicable Air Quality Plans

The applicable air quality plans do not outline any new control measures applicable to the proposed project's operating emission sources. Therefore, compliance with existing District rules and regulations would ensure compliance with those air quality plans.

SDAPCD is evaluating additional fugitive dust control measures that it plans to include in a new fugitive dust control rule that should be promulgated in a new Rule 55 either late in 2008 or early in 2009. Staff's recommended Conditions of Certification **AQ-SC3** and **AQ-SC4** include fugitive dust control measures that should meet or exceed the fugitive dust control requirements that are currently being considered by the District. However, **AQ-SC3** has been revised to include the potential that specific fugitive dust control measures that are required by future District Rule 55 could be more stringent than those currently required in staff's proposed conditions.

Localized Cumulative Impacts

Since the power plant air quality impacts can be reasonably estimated through air dispersion modeling (see the "Operational Modeling Analysis" subsection) the project contributions to localized cumulative impacts can be estimated. To represent *past* and, to an extent, *present projects* that contribute to ambient air quality conditions, the Energy Commission staff recommends the use of ambient air quality monitoring data (see the "Environmental Setting" subsection), referred to as the *background*. The staff takes the following steps to estimate what are additional appropriate "present projects" that are not represented in the background and "reasonably foreseeable projects":

- First, the Energy Commission staff (or the applicant) works with the air district to identify all projects that have submitted, within the last year of monitoring data, new applications for an authority to construct (ATC) or permit to operate (PTO) and applications to modify an existing PTO within six miles of the project site. Based on staff's modeling experience, beyond six miles there is no statistically significant concentration overlap for non-reactive pollutant concentrations between two stationary emission sources.
- Second, the Energy Commission staff (or the applicant) works with the air district and local counties to identify any new area sources within six miles of the project site. As opposed to point sources, area sources include sources like agricultural fields, residential developments or other such sources that do not have a distinct point of emission. New area sources are typically identified through draft or final Environmental Impact Reports (EIRs) that are prepared for those sources. The initiation of the EIR process is a reasonable basis on which to determine what is "reasonably foreseeable" for new area sources.
- The data submitted, or generated from the applications with the air district for point sources or initiating the EIR process for area sources, provides enough information to include these new emission sources in air dispersion modeling. Thus, the next step is to review the available EIR(s) and permit application(s), determine what sources must be modeled and how they must be modeled.
- Sources that are not new, but may not be represented in ambient air quality monitoring are also identified and included in the analysis. These sources include existing sources that are co-located with or adjacent to the proposed source (such as an existing power plant). In most cases, the ambient air quality measurements are not recorded close to the proposed project, thus a local major source might not be well represented by the background air monitoring. When these sources are included, it is typically a result of there being an existing source on the project site and the ambient air quality monitoring station being more than two miles away.
- The modeling results must be carefully interpreted so that they are not skewed towards a single source, in high impact areas near that source's fence line. It is not truly a cumulative impact of the OGP if the high impact area is the result of high fence line concentrations from another stationary source and OGP is not providing a substantial contribution to the determined high impact area.

Once the modeling results are interpreted, they are added to the background ambient air quality monitoring data and thus the modeling portion of the cumulative assessment is complete. Due to the use of air dispersion modeling programs in staff's cumulative

impacts analysis, the applicant must submit a modeling protocol, based on information requirements for an application, prior to beginning the investigation of the sources to be modeled in the cumulative analysis. The modeling protocol is typically reviewed, commented on, and eventually approved in the Data Adequacy phase of the licensing procedure. Staff typically assists the applicant in finding sources (as described above), characterizing those sources, and interpreting the results of the modeling. However, the actual modeling runs are usually left to the applicant to complete. There are several reasons for this: modeling analyses take time to perform and require significant expertise, the applicant has already performed a modeling analysis of the project alone (see the "Operational Modeling Analysis" subsection), and the applicant can act on its own to reduce stipulated emission rates and/or increase emission control requirements as the results warrant. Once the cumulative project emission impacts are determined, the necessity to mitigate the project emissions can be evaluated, and the mitigation itself can be proposed by staff and/or the applicant (see the "Mitigation" subsection).

The cumulative assessment for OGP includes the two other sources shown in **Air Quality Table 27**.

Air Quality Table 27
Facilities Included in the Cumulative Modeling Analysis

Facility	Source Type
Rosemary's Mountain Quarry	Rock Quarry, Processing and Asphalt Plant
Gregory Canyon Landfill	Sanitary Landfill

The original list of possible new sources from the SDAPCD included 2 sources (OGE 2008a). However, both of these sources, one in Vista and one in Escondido are considerably more than six miles from the site.

The applicant's review of cumulative sources determined that the Rosemary's Mountain Quarry and Gregory Canyon Landfill projects were proceeding and could potentially operate at the same time as the OGP. The applicant obtained emission and other available modeling parameter data for these two projects and followed the same modeling procedures used for the OGP operating emissions modeling analysis, using the most recent version of AERMOD (Version 07026). The modeled receptors cover the area surrounding the OGP for several miles, which also covers these two projects which are both located less than two and a half miles from the OGP site.

The modeling assumed worst-case short-term emissions for the OGP (cold startup) and the normal operating emissions for the other two projects for the short-term impact modeling and permitted annual average emissions for the OGP and estimated annual emissions for the two other projects for annual impact modeling. Carbon monoxide and SO_2 were not modeled due to the low project impacts. The results of the applicant's cumulative modeling analysis, OGP cumulative peak results basis, are provided in **Air Quality Table 28**.

Air Quality Table 28
OGP Based Peak Cumulative Impacts Modeling Results (µg/m^3)

Pollutant	Averaging Period	Project Impact (µg/m^3)	Background (µg/m^3) [a]	Total Impact (µg/m^3)	Limiting Standard (µg/m^3)	Type of Standard	Percent of Standard
NO_2 [b]	1 hour	50.0	143.1	193.1	339	CAAQS	57%
	annual	0.19	32.3	32.5	57	CAAQS	57%
PM10 [c]	24 hour	1.3	57	58.3	50	CAAQS	117%
	annual	0.12	24.2	24.3	20	CAAQS	122%
PM2.5 [c]	24 hour	1.3	37.7	39.0	35	NAAQS	111%
	annual	0.12	12	12.1	12	CAAQS	101%

Source: OGP Cumulative Assessment (OGE 2008e).
[a] Background values have been adjusted per staff recommended background concentrations shown in **Air Quality Table 10**.
[b] One-hour NOx value was determined using Ozone Limiting Method calculation. Staff adjusted the annual value by multiplying by the Annual NOx Ratio Method (ARM) U.S. EPA default value of 0.75.
[c] The PM10 and PM2.5 modeling results for OGP have been corrected following the change of the base load PM10 emission factor of 2.7 lbs/hour to 3.0 lbs/hour. This resulted in the modeled vs. permitted gas turbine particulate emissions increasing from 132.8 lbs/day to 144 lbs/day and from 8.78 tons/year to 9.6 tons per year. The ratio of these pollutant corrections were used to update the PM10 and PM2.5 modeling results. PM2.5 was not actually modeled separately so it is conservatively assumed that PM10 = PM2.5.

The results of this modeling effort, **Air Quality Table 28**, show that OGP, along with the other two modeled facilities, would contribute to existing violations of the PM10 and PM2.5 ambient air quality standards. The impacts are lower than those shown in **Air Quality Table 22** due to a coarser receptor grid that was used to better identify cumulative overlap between the projects rather than determine the exact peak concentration for the project. The overlap between the three projects is very low and does not cause new standards violations. The overlap in NOx and PM impacts between the projects is provided in **Air Quality Table 29**.

Air Quality Table 29
Cumulate Project Concentration Overlap (µg/m^3)

Pollutant	Project	OGP Peak	RMQ Peak	GCL Peak
NOx 1-hour	OGP	50.0	0.3	0.0
	GCL	0.0	0.4	106.7
	RMQ	0.0	86.7	0.0
	Total	50.0	78.1 [a]	160.1 [a]
NOx Annual	OGP	0.143	0.004	0.001
	GCL	0.023	0.026	0.167
	RMQ	0.026	0.361	0.018
	Total	0.192	0.391	0.186
PM 24-hour	OGP	1.22	0.00	0.00
	GCL	0.01	0.19	4.62
	RMQ	0.02	4.85	0.14
	Total	1.25	5.04	4.76
PM Annual	OGP	0.079	0.002	0.001
	GCL	0.020	0.080	0.335
	RMQ	0.017	0.232	0.015
	Total	0.116	0.315	0.351

Source: OGE 2008e
RMQ – Rosemary's Mountain Quarry, GCL – Gregory Canyon Landfill
[a] The total is less than the maximum or sum due to how the AERMOD OLM program works, where the reaction rate is a function of both the hourly ozone concentration and the mass of NOx in the plume, so increasing the NOx through multiple sources changes the reaction rate and creates a non-linear result.

The applicant's modeling results determined for the Rosemary's Mountain Quarry based peak concentrations and the Gregory Canyon Landfill peak concentrations, as shown in **Air Quality Table 29**, indicate extremely low overlap between the OGP and the maximum concentrations (OGP contributes less than 1% of those peak concentrations). The modeling also show that OGP, along with the other two modeled facilities, would not contribute to any new NOx AAQS violations (OGE 2008e).

The OGP would mitigate their PM10 and particulate precursor pollutant (NOx, SOx, and VOC) emissions through funded emission reductions. These emission reductions would be generated in amounts greater than the expected operating emissions. Therefore, the particulate matter (PM10 and PM2.5) OGP cumulative operating impacts after mitigation are considered to be less than significant.

Staff has considered the minority population surrounding the site (see **Socioeconomics Figure 1**). Since the project's cumulative air quality impacts have been mitigated to less than significant, there is no environmental justice issue for air quality.

COMPLIANCE WITH LORS

The San Diego Air Pollution Control District issued a Preliminary Determination of Compliance (PDOC) for the OGP on October 8, 2008 (SDAPCD 2008c). Compliance with all District rules and regulations was demonstrated to the District's satisfaction in the PDOC. The District's PDOC conditions are presented in the Conditions of Certification (**AQ-1** to **AQ-93**).
Energy Commission staff will provide comment on the PDOC to the District and will reflect any major changes to compliance with LORS in an addendum to the Staff Analysis that will be published some time after the Final Determination of Compliance (FDOC) has been published by the District, which is assumed to occur in mid-November.

FEDERAL

The District is responsible for issuing the federal New Source Review (NSR) permit but has not yet been delegated enforcement of the applicable New Source Performance Standard (Subpart KKKK). This project would not require a PSD permit from U.S. EPA prior to initiating construction.

STATE

The applicant would demonstrate that the project would comply with Section 41700 of the California State Health and Safety Code, which restricts emissions that would cause nuisance or injury, with the issuance of the District's Final Determination of Compliance and the Energy Commission's affirmative finding for the project.

The fire pump engine is also subject to the Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines. This measure limits the types of fuels allowed, established maximum emission rates, establishes recordkeeping

requirements. The proposed Tier 2 engine meets the emission limit requirements of this rule. This measure would also limit the engine's testing and maintenance operation to 50 hours per year.

LOCAL

The District rules and regulations specify the emissions control and offset requirements for new sources such as the OGP. Best Available Control Technology would be implemented, and emission reduction credits (ERCs) are not required by District rules and regulations based on the permitted emission levels for this project. Compliance with the District's new source requirements would ensure that the project would be consistent with the strategies and future emissions anticipated under the District's air quality attainment and maintenance plans.

The applicant provided an air quality permit application to the SDAPCD in 2007 when the siting case was in the Small Power Plant Exemption process. They provided additional information to the District when they filed the AFC in June 2008. The District has issued a PDOC (SDAPCD 2008c), which states that the proposed project is expected to comply with all applicable District rules and regulations. The FDOC will be published after completion of a 30-day public review period ending November 7, 2008. The DOC evaluates whether and under what conditions the proposed project would comply with the District's applicable rules and regulations, as described below.

Regulation II – Permits

Rule 20.1 and 20.2 – New Source Review

Rules 20.1 and 20.3 generically apply to all sources subject to permitting under the nonattainment NSR and PSD programs. All portions of Rule 20.1 apply. This includes definitions and instructions for calculating emissions. Applicable components of Rule 20.2 are described below. Rule 20.3, which includes the requirements for offsets are only applicable to major stationary sources. The District has determined that this is not a major stationary source as defined in Rule 20.1; so Rule 20.3, including offset requirements, does not apply to the OGP.

Rule 20.2(d)(1) – Best Available Control Technology/Lowest Achievable Emission Rate

This subsection of the rule requires that BACT be installed on a pollutant specific basis if emissions exceed 10 lbs/day for each criteria pollutant (except for CO, for which the PSD BACT threshold is 100 tons per year). This subsection also requires that Lowest Achievable Emission Rate (LAER) be installed on a pollutant specific basis if the emissions exceed 50 tons per year for NOx (oxides of nitrogen) or VOC emissions. Because the District attains the national ambient air quality standards for CO, SO_2, and PM10, LAER does not apply to these particular pollutants (District Rule 20.3[d][1][v]). The OGP NOx and VOC emissions are below the trigger for LAER. BACT is required for NOx, VOC, PM10, and SOx. In the PDOC, the District has determined that the proposed SCR and oxidation catalyst emission controls are BACT for gas turbines. The other emissions sources (emergency engines and cooling tower) do not trigger BACT.

Rule 20.2(d)(2) – Air Quality Impact Analysis

This portion of the rule requires that an Air Quality Impact Analysis (AQIA) be performed for air contaminants that exceed the trigger levels published in Table 20.3-1 of the District's rules and regulations. For an AQIA of PM10, the rules require that direct emissions and emissions of PM10 precursors be included in the analysis.

The OGP has prepared an AQIA for NOx, CO, and PM10 that was evaluated by District staff as part of the PDOC analysis.

Rule 20.2(d)(4) – Public Notice and Comment

This portion of the rule requires the District to publish a notice of the proposed action in at least one newspaper of general circulation in San Diego County. The District must allow at least 30 days for public comment and consider all comments submitted. The District must also make all information regarding the evaluation available for public inspection.

The official public notice and comment period for the OGP started after newspaper notice publication on October 9, 2008, and ends on November 7, 2008.

Rule 20.5 – Power Plants

This rule requires that the District prepare a decision of Preliminary and Final Determinations of Compliance (PDOC and FDOC), which shall confer the same rights and privileges as an Authority to Construct only after successful completion of the Energy Commission's licensing process.

Regulation IV – Prohibitions

Rule 50 – Visible Emissions

This rule prohibits air contaminant emissions into the atmosphere darker than Ringelmann Number 1 (20% opacity) for more than an aggregate of three minutes in any consecutive 60-minute time period. In the PDOC, the District has determined that the facility is expected to comply with this rule.

Rule 51 – Nuisance

This rule prohibits the discharge of air contaminants that cause or have a tendency to cause injury, detriment, and nuisance or annoyance to people and/or the public or damage to any business or property. In the PDOC, the District has determined that the facility is expected to comply with this rule.

Rule 52 – Particulate Matter

This rule is a general limitation for all sources of particulate matter to not exceed 0.10 grains per dry standard cubic foot (0.23 grams per dry standard cubic meter) of exhaust gas. Stationary internal combustion engines are exempt from this requirement. The district did not calculate the grain loading for the cooling tower, which would be subject to this rule, but staff has calculated the grain loading to be 0.000031 grains per dry standard, well within the grain loading standard and in compliance with the requirements of this rule.

Rule 53 – Specific Air Contaminants

This rule limits emissions of sulfur compounds (calculated as SO_2) to less than or equal to 0.05%, by volume, on a dry basis. The use of pipeline-quality natural gas fuel would ensure compliance with the sulfur compound emission limitation of this rule.

This rule also contains a limitation restricting particulate matter emissions from gaseous fuel combustion to less than or equal to 0.10 grains per dry standard cubic foot of exhaust calculated at 12% CO_2. The district calculated the maximum grain loading to be 0.002 grains per dry standard cubic foot for the gas turbines and 0.008 grains per dry standard cubic foot for the black-start engine, in compliance with the requirements of this rule.

Rule 62 – Sulfur Content of Fuels

This rule requires the sulfur content of gaseous fuels to contain no more than 10 grains of sulfur compounds, calculated as hydrogen sulfide, per 100 cubic feet of dry gaseous fuel (0.23 grams of sulfur compounds, calculated as hydrogen sulfide, per cubic meter of dry gaseous fuel), at standard conditions.

The PDOC did not specifically identify compliance with this rule, but the use of pipeline-quality natural gas would ensure compliance with this rule.

Rule 69.3 – Stationary Gas Turbines - Reasonably Available Control Technology

This rule limits NOx emissions from gas turbines greater than 0.3 MW to 42 ppm at 15% oxygen when fired on natural gas. The rule also specifies monitoring and record-keeping requirements. Startups, shutdowns, and fuel changes are defined by the rule and excluded from compliance with these limits.

The PDOC notes that compliance with this rule is expected. This rule's emission limits are less stringent than the BACT/LAER requirement of Rule 20.3(d)(1) for normal operation.

Rule 69.3.1 – Stationary Gas Turbines - Best Available Retrofit Control Technology

This rule limits NOx emissions from existing and new gas turbines greater than 10 MW to 15 x (E/25) ppm when operating uncontrolled and 9 x (E/25) ppm at 15% oxygen when operating with controls and averaged over a one-hour period (where E is the percent thermal efficiency of the unit, typically between 30–40% for gas turbines). The NOx emission limit consistent with the thermal efficiency for the OGP (37%) is 22.2 ppmv and 13.3 ppmv for uncontrolled and controlled operations, respectively. The rule also specifies monitoring and record-keeping requirements. Startups, shutdowns, and fuel changes are defined by the rule and excluded from compliance with these limits. The District has also adopted a policy of 200 hours for initial commissioning when the standards of this rule do not apply.

The PDOC notes that compliance with this rule is expected. This rule's emission limits are less stringent than the BACT/LAER requirement of Rule 20.3(d)(1) for normal operation.

Rule 69.4.1 – Stationary Reciprocating Internal Combustion Engines – Best Available Retrofit Control Technology

This rule limits emissions of NOx, CO, and VOC, and also has maintenance and recordkeeping requirements. NOx emissions are limited to 6.9 grams/bhp-hr, where the black-start engine has an emission guarantee of 1.5 grams/bhp-hr and the fire pump engine has an emission guarantee of 3.84 grams/bhp-hr. CO emission are limited to 4500 ppmv at 15% oxygen, where the black-start engine emissions are calculated to be 314 ppmv and the fire pump engine emissions are calculated to be 107 ppmv. VOC emissions from rich burn engines (only applicable to the black-start engine) are limited to 250 ppmv at 15% oxygen, where the black-start engine emissions are calculated to be 38 ppmv. Therefore, compliance with this rule is expected. This rule also exempts emergency engines from periodic source testing.

Regulation X – Standards of Performance for New Stationary Sources

This regulation adopts federal New Source Performance Standards (NSPS, 40 CFR Part 60) by reference. The relevant NSPS for the OGP, Subpart KKKK – Gas Turbines, has not been formally delegated for enforcement to SDAPCD; however, it is expected to be delegated later this year. This rule's emission limits are less stringent than the BACT/LAER requirement of Rule 20.3(d)(1) for normal operation. At the time of delegation the District would ensure compliance with the record-keeping requirements of this regulation.

Regulation XI – National Emission Standards for Hazardous Air Pollutants

This regulation adopts federal standards for hazardous air pollutants (HAPs) by reference. No such standards presently exist that would apply to the project due to the project's not being a major source of HAPs emissions.

Regulation XII – Toxic Air Contaminants

Rule 1200 – Toxic Air Contaminants, New Source Review

This rule requires a health risk estimate for sources of toxic air contaminants. Toxics Best Available Control Technology (TBACT) must be installed if a Health Risk Assessment shows an incremental cancer risk greater than one in a million, and no source would be allowed to cause an incremental cancer risk exceeding ten in a million. The District found that the project complied with the requirements of this rule.

Regulation XIV – Title V Operating Permits

Rule 1401 – General Provisions

This regulation contains the requirements for federal Title V Operating Permits. The applicant is required to submit for a revised Title V Operating Permit application within twelve months of initial startup of the project.

Rule 1412 – Federal Acid Rain Program Requirements

This regulation contains the requirements for participation in the federal Acid Rain Program. The applicant is required to submit an Acid Rain Program application to the District prior to commencement of operation.

NOTEWORTHY PUBLIC BENEFITS

No air quality related noteworthy public benefits have been identified.

CONCLUSIONS

The OGP would likely comply with all laws, ordinances, regulations, and standards and would result in a less than significant impact under CEQA if OGP complies with all staff-recommended and District-required conditions of certification and provides the emission offsets, in quantities recommended by staff in Condition of Certification **AQ-SC6**.

Staff has considered the minority population surrounding the site (see **Socioeconomics Figure 1**). Since the project's direct and cumulative air quality impacts have been reduced to less than significant, there is no environmental justice issue for air quality.

Staff has proposed a number of permit conditions that are in addition to the permit conditions that the SDAPCD has proposed. In most cases the staff-proposed permit conditions deal with air quality issues that the SDAPCD is not required to address. The staff-proposed conditions of certification are summarized as follows. Conditions of Certification **AQ-SC1** through **AQ-SC5** are construction-related permit conditions. **AQ-SC6** formalizes applicant' stipulation to staff's proposal to provide emission reductions for the project's emission increase on a 1:1 ratio for nonattainment pollutants and their precursors. **AQ-SC7** provides the administrative procedure requirements for project modifications. **AQ-SC8** limits concurrent uncontrolled initial commissioning operation for the two turbines and limits such operation to occur only from 7 am to 7 pm as both assumed and stipulated by the applicant. **AQ-SC9** and **AQ-SC10** provides the chiller cooling tower mist eliminator performance standard and requires the applicant to conduct cooling tower water testing and provide emission reporting that is not required in the SDAPCD conditions, respectively. **AQ-SC11** is a quarterly compliance report requirement. **AQ-SC12** requires new water delivery trucks or trucks with new engines that are maintained properly to minimize water trucking emissions.

Conditions of Certification **AQ-1** through **AQ-93** are the SDAPCD permit conditions with staff proposed verification language.

Global climate change and greenhouse gas (GHG) emissions from the project are discussed and analyzed in AIR APPENDIX A. The Orange Grove Project, as a peaking project with an enforceable operating limitation less than 60% of capacity, is not subject to the requirements of SB1368 and the Emission Performance Standard. Staff recommends reporting of the GHG emissions as the Air Resources Board develops greenhouse gas regulations and/or trading markets (see Condition of Certification

GHG-1 in AIR APPENDIX A). The project may be subject to additional reporting requirements and GHG reduction or trading requirements as these regulations become more fully developed and implemented.

PROPOSED CONDITIONS OF CERTIFICATION

Staff recommends the following conditions of certification to address the impacts associated with the construction and operation of the OGP project. These conditions include the SDAPCD proposed conditions from the PDOC, with appropriate staff proposed verification language for each condition, as well as Energy Commission staff proposed conditions. Revisions to the conditions provided in the District's FDOC, which should be published sometime in November 2008, will be incorporated in the Commission's Staff Assessment Addendum.

STAFF CONDITIONS

AQ-SC1 Air Quality Construction Mitigation Manager (AQCMM): The project owner shall designate and retain an on-site AQCMM who shall be responsible for directing and documenting compliance with conditions AQ-SC3, AQ-SC4, and AQ-SC5 for the entire project site and linear facility construction. The on-site AQCMM may delegate responsibilities to one or more AQCMM Delegates. The AQCMM and AQCMM Delegates shall have full access to all areas of construction on the project site and linear facilities and shall have the authority to stop any or all construction activities as warranted by applicable construction mitigation conditions. The AQCMM and AQCMM Delegates may have other responsibilities in addition to those described in this condition. The AQCMM shall not be terminated without written consent of the Compliance Project Manager (CPM).

Verification: At least 60 days prior to the start of ground disturbance, the project owner shall submit to the CPM for approval, the name, resume, qualifications, and contact information for the on-site AQCMM and all AQCMM Delegates. The AQCMM and all Delegates must be approved by the CPM before the start of ground disturbance.

AQ-SC2 Air Quality Construction Mitigation Plan (AQCMP): The project owner shall provide an AQCMP, for approval, which details the steps that will be taken and the reporting requirements necessary to ensure compliance with conditions **AQ-SC3**, **AQ-SC4**, and **AQ-SC5**.

Verification: At least 60 days prior to the start of any ground disturbance, the project owner shall submit the AQCMP to the CPM for approval. The CPM will notify the project owner of any necessary modifications to the plan within 30 days from the date of receipt. The AQCMP must be approved by the CPM before the start of ground disturbance.

AQ-SC3 Construction Fugitive Dust Control: The AQCMM shall submit documentation to the CPM in each Monthly Compliance Report (MCR) that demonstrates compliance with the following mitigation measures for the purposes of preventing all fugitive dust plumes from leaving the project site and linear

facility routes. Any deviation from the following mitigation measures shall require prior CPM notification and approval.

1. All unpaved roads and disturbed areas in the project and laydown construction sites shall be watered as frequently as necessary to comply with the dust mitigation objectives of AQ-SC4. The frequency of watering may be reduced or eliminated during periods of precipitation.

2. No vehicle shall exceed 10 miles per hour on unpaved areas within the project and laydown construction sites.

3. The construction site entrances shall be posted with visible speed limit signs.

4. All construction equipment vehicle tires shall be inspected and washed as necessary to be cleaned and free of dirt prior to entering paved roadways.

5. Gravel ramps of at least 20 feet in length must be provided at the tire washing/cleaning station.

6. All unpaved exits from the construction site shall be graveled or treated to prevent track-out to public roadways.

7. All construction vehicles shall enter the construction site through the treated entrance roadways, unless an alternative route has been submitted to and approved by the CPM.

8. Construction areas adjacent to any paved roadway shall be provided with sandbags or other measures as specified in the Storm Water Pollution Prevention Plan (SWPPP) to prevent runoff to roadways.

9. All paved roads within the construction site shall be swept at least twice daily (or less during periods of precipitation) on days when construction activity occurs to prevent the accumulation of dirt and debris.

10. At least the first 500 feet of any public roadway exiting the construction site shall be swept visually clean, using wet sweepers or air filtered dry vacuum sweepers, at least twice daily (or less during periods of precipitation) on days when construction activity occurs or on any other day when dirt or runoff from the construction site is visible on the public roadways.

11. All soil storage piles and disturbed areas that remain inactive for longer than 10 days shall be covered or shall be treated with appropriate dust suppressant compounds.

12. All vehicles that are used to transport solid bulk material on public roadways and that have the potential to cause visible emissions shall be provided with a cover or the materials shall be sufficiently wetted and loaded onto the trucks in a manner to provide at least two feet of freeboard.

13. Wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, and/or vegetation) shall be used on all construction areas that may be disturbed. Any windbreaks installed to comply with this condition shall remain in place until the soil is stabilized or permanently covered with vegetation.

14. Disturbed areas will be re-vegetated as soon as practical.

The fugitive dust requirements listed in this condition may be replaced with as stringent or more stringent methods as required by SDAPCD Rule 55 if that rule becomes effective prior to the completion of the project's construction activities.

Verification: The project owner shall include in the MCR (1) a summary of all actions taken to maintain compliance with this condition, (2) copies of any complaints filed with the air district in relation to project construction, and (3) any other documentation deemed necessary by the CPM and AQCMM to verify compliance with this condition. Such information may be provided via electronic format or disk at the project owner's discretion.

AQ-SC4 Dust Plume Response Requirement: The AQCMM or an AQCMM Delegate shall monitor all construction activities for visible dust plumes. Observations of visible dust plumes that have the potential to be transported (1) off the project site or (2) 200 feet beyond the centerline of the construction of linear facilities, or (3) within 100 feet upwind of any regularly occupied structures not owned by the project owner indicate that existing mitigation measures are not resulting in effective mitigation. The AQCMM or Delegate shall implement the following procedures for additional mitigation measures in the event that such visible dust plumes are observed:

Step 1: The AQCMM or Delegate shall direct more intensive application of the existing mitigation methods within 15 minutes of making such a determination.

Step 2: The AQCMM or Delegate shall direct implementation of additional methods of dust suppression if Step 1 specified above fails to result in adequate mitigation within 30 minutes of the original determination.

Step 3: The AQCMM or Delegate shall direct a temporary shutdown of the activity causing the emissions if Step 2 specified above fails to result in effective mitigation within one hour of the original determination. The activity shall not restart until the AQCMM or Delegate is satisfied that appropriate additional mitigation or other site conditions have changed so that visual dust plumes will not result upon restarting the shut-down

source. The owner/operator may appeal to the CPM any directive from the AQCMM or Delegate to shut down an activity, provided that the shutdown shall go into effect within one hour of the original determination, unless overruled by the CPM before that time.

Verification: The AQCMP shall include a section detailing how the additional mitigation measures will be accomplished within the time limits specified.

AQ-SC5 Diesel-Fueled Engines Control: The AQCMM shall submit to the CPM, in the MCR, a construction mitigation report that demonstrates compliance with the following mitigation measures for the purposes of controlling diesel construction-related emissions. Any deviation from the following mitigation measures shall require prior CPM notification and approval.

A. All diesel-fueled engines used in the construction of the facility shall be fueled only with ultra-low sulfur diesel, which contains no more than 15 ppm sulfur.

B. All diesel-fueled engines used in the construction of the facility shall have clearly visible tags issued by the on-site AQCMM showing that the engine meets the conditions set forth herein.

C. A good faith effort shall be made to find and use off-road construction diesel equipment that has a rating of 100 hp to 750 hp and that meets the Tier 3 California Emission Standards for Off-Road Compression-Ignition Engines as specified in Title 13, California Code of Regulations section 2423(b)(1). This good faith effort shall be documented with signed written correspondence by the appropriate construction contractors along with documented correspondence with at least two construction equipment rental firms.

D. All construction diesel engines, which have a rating of 50 hp or more, shall meet, at a minimum, the Tier 2 California Emission Standards for Off-Road Compression-Ignition Engines as specified in Title 13, California Code of Regulations section 2423(b)(1). The following exceptions for specific construction equipment items may be made on a case-by-case basis.

1. Tier 1 equipment will be allowed on a case-by-case basis only when the project owner has documented that no Tier 2 equipment is available for a particular equipment type that must be used to complete the project's construction. This shall be documented with signed written correspondence by the appropriate construction contractors along with documented correspondence with at least two construction equipment rental firms.

2. The construction equipment item is intended to be on site for five days or less.

3. Equipment owned by specialty subcontractors may be granted an exemption, for single equipment items on a case-by-case basis, if it

can be demonstrated that extreme financial hardship would occur if the specialty subcontractor had to rent replacement equipment, or if it can be demonstrated that a specialized equipment item is not available by rental.

E. All heavy earthmoving equipment and heavy duty construction-related trucks with engines meeting the requirements of (c) above shall be properly maintained and the engines tuned to the engine manufacturer's specifications.

F. All diesel heavy construction equipment shall not remain running at idle for more than five minutes, to the extent practical.

G. Construction equipment will employ electric motors when feasible.

Verification: The project owner shall include in the MCR (1) a summary of all actions taken to maintain compliance with this condition, (2) copies of all diesel fuel purchase records, (3) a list of all heavy equipment used on site during that month, including the owner of that equipment and a letter from each owner indicating that equipment has been properly maintained, and (4) any other documentation deemed necessary by the CPM and AQCMM to verify compliance with this condition. Such information may be provided via electronic format or disk at the project owner's discretion.

AQ-SC6 The project owner shall provide emission reduction mitigation to offset the project's NOx, PM10, SOx, and VOC emission increases at a ratio of 1:1. These emission reductions are based on the following maximum annual emissions for the facility (tons/yr).

Emission Reduction Credits/Pollutant	**Tons/yr**
NOx	6.86
PM10	3.76
SOx	0.40
VOC	1.70
Total Tons	12.72

Emission reductions can be provided in any one of the following methods in the following order of preference of their use:

1. The project owner can fund emission reductions through the Carl Moyer Fund in the amount of $16,000/ton, or final 2008 ARB Carl Moyer Program Guideline cost effectiveness cap value, for the total ton quantity listed in the above table, minus any tons offset using the other two listed methods, with an additional 20% administration fee to fund the SDAPCD and/or other responsible local agencies with jurisdiction within 25 miles of the project site to be used to find and fund local emission reduction projects to the extent feasible. Emission reduction projects funding by this method will be weighted for evaluation and selection, within the funding guideline value of $16,000/ton of reduction, based on the proximity of the emission

reduction project and the relative health benefit to the local community surrounding the project site. Emission reduction project cost will not be a consideration for selection as long as the emission reduction project is within the proposed or approved 2008, or other year as applicable, Carl Moyer funding guideline value,

2. The project owner can fund other existing public agency regulated stationary or mobile source emission reduction programs or create a project specific fund to be administered through the SDAPCD or other local agency, which would provide surplus emission reductions. This funding shall include appropriate administrative fees as determined by the administering agency to obtain local emission reductions to the extent feasible. The project owner shall be responsible for demonstrating that the amount of such funding meets the emission reduction requirements of this condition. Emission reduction projects funding by this method will be weighted for evaluation and selection based on the proximity of the emission reduction project and the relative health benefit to the local community surrounding the project site.

3. ERC certificates from emission reductions occurring in the San Diego Air Basin can be used to offset each pollutant on a 1:1 offset ratio basis only if local emission reduction projects are clearly demonstrated to be unavailable using methods 1 or 2 to meet the total emission reduction burden required by this condition. ERCs can be used on an interpollutant basis for SOx for PM10, NOx for VOC, and VOC for NOx, where the project owner will provide a letter from the SDAPCD that indicates the District's allowed interpollutant offset ratio, or PM10 for SOx ERCs can be used on a 1:1 basis.

Carl Moyer or other emission reduction funding shall be provided to the responsible agencies prior to the initiation of on-site construction activities. The project owner shall work with the appropriate agencies to target emission reduction projects in the project area to the extent feasible. Emission reduction project selection information will be provided to the CPM for review and comment. Unused administrative fees shall be used for additional emission reduction program funding. ERC certificates, if used, will be surrendered prior to first turbine fire.

Verification: The project owner shall submit to the CPM confirmation that the appropriate quantity of Carl Moyer Project or other emission reduction program funding and/or ERCs have been provided prior to initiation of on-site construction activities for emission reduction program funding and at least 30 days prior turbine first fire for ERCs. The project owner shall provide emission reduction project selection information to the CPM for review and comment at least 15 days prior to committing funds to each selected emission reduction project. The project owner shall provide confirmation that the level of emission reduction program funding will meet the emission reduction requirements of this condition.

AQ-SC7 The project owner shall submit to the CPM for review and approval any modification proposed by the project owner to any project air permit. The

project owner shall submit to the CPM any modification to any permit proposed by the District or U.S. EPA, and any revised permit issued by the District or U.S. EPA, for the project.

Verification: The project owner shall submit any proposed air permit modification to the CPM within five working days of its submittal either by 1) the project owner to an agency, or 2) receipt of proposed modifications from an agency. The project owner shall submit all modified air permits to the CPM within 15 days of receipt.

AQ-SC8 The project owner shall only fire the CTGs during initial commissioning, when operating without fully functioning emission controls (SCR and oxidation catalyst), between the hours starting at 7 am ending at 7 pm.

Verification: The project owner shall submit to the CPM in the MCR the actual turbine initial commissioning hourly records while operating without fully functioning pollution controls (SCR and oxidation catalyst).

AQ-SC9 The chiller cooling tower shall have a mist eliminator with a manufacturer guaranteed mist reduction rate of 0.001% or less of the water recirculation rate.

Verification: The project owner shall provide the CPM a copy of the manufacturer guarantee for the mist eliminator 30 days prior to installation of the chiller.

AQ-SC10 The chiller cooling tower water shall be tested for total dissolved solids and that data shall be used to determine and report the particulate matter emissions from the chiller cooling tower. The cooling tower water shall be tested at least once annually during the anticipated summer operation peak period (July through September).

Verification: The project owner shall provide the water quality test results and the chiller cooling tower emissions estimates to the CPM as part of the fourth quarter's quarterly operational report (AQ-SC11).

AQ-SC11 The project owner shall submit to the CPM Quarterly Operation Reports, following the end of each calendar quarter that include operational and emissions information as necessary to demonstrate compliance with the conditions of certification herein. The Quarterly Operation Report will specifically note or highlight incidences of noncompliance.

Verification: The project owner shall submit the Quarterly Operation Reports to the CPM and to the District, if requested, no later than 30 days following the end of each calendar quarter.

AQ-SC12 The project owner shall procure the latest model year water delivery trucks, or trucks retrofit with new model year engines, that meet California on-road vehicle emission standards; and the water delivery trucks shall be properly maintained and the engines tuned to the engine manufacturer's specifications.

Verification: The project owner shall submit to the CPM information on the procured water delivery trucks that show compliance with this condition within 15 days of

procuring the trucks. The project owner shall submit truck maintenance records for the year in the fourth quarter Quarterly Operation Reports (AQ-SC11) that show compliance with the maintenance provision of this condition.

DISTRICT PRELIMINARY DETERMINATION OF COMPLIANCE CONDITIONS (SDAPCD 2008C)

985708

Gas Turbine Engine Generator #1: General Electric, Model LM-6000 PC SPRINT, 49.8 MW capacity, 468.8 MMBtu/hr heat input, natural gas fired, simple cycle, with water injection; a selective catalytic reduction (SCR) system including an automatic ammonia injection control system; an oxidation catalyst; a Continuous Emission Monitoring System (CEMS) for NOx, CO, and O_2; a data acquisition and handling system (DAHS); and remote data collection node (RDCN).

985709

Gas Turbine Engine Generator #1: General Electric, Model LM-6000 PC SPRINT, 49.8 MW capacity, 468.8 MMBtu/hr heat input, natural gas fired, simple cycle, with water injection; a selective catalytic reduction (SCR) system including an automatic ammonia injection control system; an oxidation catalyst; a Continuous Emission Monitoring System (CEMS) for NOx, CO, and O_2; a data acquisition and handling system (DAHS); and remote data collection node (RDCN).

General Conditions

AQ-1 This equipment shall be properly maintained and kept in good operating condition at all times.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-2 The project owner shall operate the project in accordance with all data and specifications submitted with the application.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-3 Access, facilities, utilities, and any necessary safety equipment for source testing and inspections shall be provided upon request of the Air Pollution Control District.

Verification: The project owner shall provide facilities, utilities, and safety equipment for source testing and inspections upon request of the District, ARB, and the Energy Commission.

AQ-4 The project owner shall obtain any necessary District permits for all ancillary combustion equipment including emergency engines, prior to on-site delivery of the equipment.

Verification: The project owner shall submit any proposed air permit modification to the CPM within five working days of its submittal either by 1) the project owner to an

agency, or 2) receipt of proposed modifications from an agency. The project owner shall submit all modified air permits to the CPM within 15 days of receipt.

AQ-5 The exhaust stacks for the combustion turbine shall be at least 80 feet in height above site base elevation.

Verification: The project owner shall submit to the CPM for review the exhaust stack specification at least 60 days before the installation of the stack.

AQ-6 This equipment shall be fired on Public Utility Commission (PUC) quality natural gas only. The project owner shall maintain quarterly records of sulfur content (grains/100 dscf) and higher and lower heating values (Btu/dscf) of the natural gas and provide such records to District personnel upon request.

Verification: The project owner shall submit the quarterly fuel sulfur content values in the in the Quarterly Operation Reports (**AQ-SC11**) and make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-7 The project owner shall submit a complete Acid Rain Permit application prior to commencement of operation in accordance with Title 40 Code of Federal Regulations Part 72 to the District and submit a copy to U.S. EPA, Region IX.

Verification: The project owner shall submit to the CPM copies of the acid rain permit application within five working days of its submittal by the project owner to the District.

AQ-8 The project owner shall submit an application to the District for a Federal (Title V) Operating Permit, in accordance with District Regulation XIV within 12 months after initial startup of this equipment.

Verification: The project owner shall submit to the CPM copies of the Title V operating permit application within five working days of its submittal by the project owner to the District.

AQ-9 The project owner shall comply with all applicable provisions of 40 CFR 73, including requirements to offset, hold and retire SO_2 allowances.

Verification: The project owner shall submit to the CPM and District the CTG annual operating data and SO2 allowance information demonstrating compliance with all applicable provisions of 40 CFR 73 as part of the Quarterly Operation Reports (**AQ-SC11**).

AQ-10 The total combined unit operating hours for the combustion turbines of Permit No. 985708 and 985711 shall not exceed 6,400 hours per calendar year. Unit operating hour is defined in 40CFR 72.2. (NSR).

Verification: The project owner shall submit to the CPM and District the CTG annual operating data demonstrating compliance with this condition as part of the fourth quarter's Quarterly Operation Reports (**AQ-SC11**).

AQ-11 Operation of each turbine under startup and shutdown conditions shall not exceed 200 hours per year.

Verification: The project owner shall submit to the CPM and District the CTG startup and shutdown operating data demonstrating compliance with this condition as part of the fourth quarter's Quarterly Operation Reports (**AQ-SC11**).

AQ-12 The project owner shall comply with the applicable requirements in 40 CFR Parts 60, 72, 73, and 75.

Verification: The project owner shall submit to the CPM and District the CTG annual operating data demonstrating compliance with all applicable provisions of 40 CFR Parts 60, 72, 73, and 75 as part of the Quarterly Operation Reports (**AQ-SC11**).

AQ-13 Power output (net MW) from each turbine generator of Permit No. 985708 and 985711 to the grid shall not exceed 49.8 MW. (NSR).

Verification: The project owner shall submit to the CPM and District the CTG net power data demonstrating compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC11**).

Emission Limits

AQ-14 For purposes of determining compliance based on source testing, the average of three subtests shall be used. For purposes of determining compliance with emission limits based on the CEMS, data collected in accordance with the CEMS protocol shall be used and averaging periods shall be as specified herein.

Verification: The project owner shall provide the annual source test data to demonstrate compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC11**), due in the quarter after the each year's source test report is completed. The project owner shall submit to the CPM for review and the District for approval a CEMS operating protocol at least 60 days prior to the operation the CEMS.

AQ-15 For each emission limit expressed as pounds per hour or parts per million based on a one-hour averaging period, compliance shall be based on each rolling continuous one-hour period using continuous emission data collected at least once every 15 minutes.

Verification: CEMS data summaries shall be submitted to the CPM as part of the Quarterly Operation Reports (**AQ-SC11**).

AQ-16 During startup, the emissions from each turbine shall not exceed the following emission limits as determined by the continuous emission monitoring system

(CEMs), continuous monitor and/or District-approved emission testing. Compliance with each limit shall be based on a 1-hour averaging period.

Pollutant	Limit, lbs/hour
Oxides of Nitrogen (NOx), calculated as NO2	20.9
Carbon Monoxide (CO)	19.6
Volatile Organic Compounds (VOC)	3.3

Verification: The project owner shall submit to the CPM the CTG operating data demonstrating compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC11**).

AQ-17 During shutdown, the emissions from each turbine shall not exceed the following emission limits as determined by the continuous emission monitoring system (CEMs), continuous monitor and/or District-approved emission testing. Compliance with each limit shall be based on a 1-hour averaging period

Pollutant	Limit, lbs/hour
Oxides of Nitrogen (NOx), calculated as NO2	16.5
Carbon Monoxide (CO)	27.8
Volatile Organic Compounds (VOC)	4.5

Verification: The project owner shall submit to the CPM the CTG operating data demonstrating compliance with this condition as part of the Quarterly Operation Report (**AQ-SC11**).

AQ-18 The emissions concentration of oxides of Nitrogen (NOx), calculated as nitrogen dioxide (NO_2), shall not exceed 2.5 parts per million by volume on a dry basis (ppmvd) corrected to 15% oxygen and averaged over one hour period. Compliance with these limits shall be demonstrated continuously based on the CEMs data and at the time of the initial source test calculated as the average of three subtests. This limit shall not apply during the initial commissioning period or startup and shutdown periods as defined herein.

Verification: The project owner shall provide the source test data to demonstrate compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC11**), due in the quarter after the source test report is completed. The project owner shall provide CEMS emissions data to demonstrate compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC11**).

AQ-19 The emissions concentration of CO from the unit exhaust stack shall not exceed 6 parts per million volume on a dry basis (ppmvd) corrected to15% oxygen and averaged over one hour period. Compliance with this limit shall be demonstrated at the time of the initial source test and continuously based on the CEMs data and based upon source testing calculated as the average of three subtests. This limit shall not apply during the initial commissioning period or startup and shutdown periods.

Verification: The project owner shall provide the source test data to demonstrate compliance with this condition as part of the Quarterly Operation Report (**AQ-SC11**), due in the quarter after the source test report is completed. The project owner shall provide emissions data to demonstrate compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC11**).

AQ-20 The VOC concentration, calculated as methane, measured in the exhaust stack, shall not exceed 2.0 ppmvd corrected to 15% oxygen. Compliance with this limit shall be demonstrated by source testing, calculated as the average of three subtests. This limit shall not apply during the initial commissioning period or startup and shutdown periods.

Verification: The project owner shall provide the source test data to demonstrate compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC11**), due in the quarter after the source test report is completed.

AQ-21 The emissions from each turbine shall not exceed the following emission limits, except during the initial commissioning period, startup and shutdown conditions, as determined by the continuous emission monitoring system (CEMs), continuous monitor and/or District-approved emission testing, calculated as the average of three subtests. Compliance with each limit shall be based on a 1-hour averaging period.

Pollutant	Limit, lbs/hour
Oxides of Nitrogen (NOx), calculated as NO2	4.3
Carbon Monoxide (CO)	6.1
Volatile Organic Compounds (VOC)	1.3

Verification: The project owner shall submit to the CPM the CTG operating and/or source test data demonstrating compliance with this condition as part of the Quarterly Operation Reports (AQ-SC11).

AQ-22 The emissions from each turbine shall not exceed the following emission limits, except during the initial commissioning period, as determined by the continuous emission monitoring system (CEMs), continuous monitor and/or District-approved emission testing, calculated as the average of three subtests. Compliance with each limit shall be based on a 1-hour averaging period.

Pollutant	Limit, lbs/day
Oxides of Nitrogen (NOx), calculated as NO2	137.1
Carbon Monoxide (CO)	179.9
Volatile Organic Compounds (VOC)	35.4

Verification: The project owner shall submit to the CPM the CTG operating data demonstrating compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC11**).

AQ-23 The emissions from each turbine shall not exceed the following emission limits, except during the initial commissioning period, as determined by the continuous emission monitoring system (CEMs), continuous monitor and/or District-approved emission testing, calculated as the average of three subtests. Compliance with each limit shall be based on a 1-hour averaging period.

Pollutant	Limit, tons/year
Oxides of Nitrogen (NOx), calculated as NO_2	8.5
Carbon Monoxide (CO)	11.3
Volatile Organic Compounds (VOC)	2.2

Verification: The project owner shall submit to the CPM the CTG operating data demonstrating compliance with this condition as part of the fourth quarter's Quarterly Operation Reports (**AQ-SC11**).

AQ-24 Emissions of particulate matter less than 10 microns (PM10) shall not exceed 3.0 lbs per hour. Compliance with this limit shall be demonstrated based upon source testing calculated as the average of three subtests.

Verification: The project owner shall provide the source test data to demonstrate compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC11**), due in the quarter after the source test report is completed.

AQ-25 Ammonia emissions from each turbine shall not exceed 5 parts per million volume on a dry basis (ppmvd) corrected to 15% oxygen. This limit shall not apply during the commissioning period or startup and shutdown periods Compliance with this limit shall be demonstrated through source testing calculated as the average of three subtests and utilizing one of the following procedures:

1. Calculate daily ammonia emissions using the following equation:
   $NH_3 = ((a-(b*c/1,000,000))*(1,000,000/b))*d$
   Where:

   a = ammonia injection rate (lbs/hour) / (17.0 lbs/lb-mole),

   b = exhaust flow rate at 15% oxygen / (29 lbs/lb-mole)

   c = change in measured NOx concentration (ppmvd @ 15% oxygen) across the catalyst,

   d = ratio of measured ammonia slip to calculate ammonia slip as derived during compliance testing.

2. Other calculation method using measured surrogate parameters to determine the daily ammonia emissions in ppmvd @15% oxygen, as approved by the District.

Verification: The project owner shall provide the estimated daily ammonia concentration and daily ammonia emissions based on the procedures given in this condition and provide the annual source test data to demonstrate compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC11**), where the source test data is due in the quarter after the source test report is completed.

AQ-26 When operating without SCR or oxidation catalyst during the initial commissioning period, the emissions from the turbine shall not exceed 50 pounds per hour of oxides of nitrogen (NOx), calculated as nitrogen dioxide and measured over each clock hour period. (Rule 20.3(d)(2)(i)).

Verification: The project owner shall submit to the CPM the CTG operating and CEMS data demonstrating compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC11**).

AQ-27 When operating without SCR or oxidation catalyst during the initial commissioning period, the total emissions from the turbine shall not exceed 43.9 pounds per hour of carbon monoxide (CO), measured over each clock hour period. (Rule 23(d)(2)(i))

Verification: The project owner shall submit to the CPM the CTG operating and CEMS data demonstrating compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC11**).

AQ-28 Visible emissions from the lube oil vents and the exhaust stack of the unit shall not exceed 20% opacity for more than three (3) minutes in any period of 60 consecutive minutes. (Rule 50)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-29 Total aggregate emissions from all stationary emission units at this stationary source, except emissions or emission units excluded from the calculation of aggregate potential to emit as specified in Rule 20.1 (d) (1), shall not exceed the following limits in each rolling 12-calendar month period. The total aggregate emissions shall include emissions during all times that the equipment is operating, including but not limited to, emissions during periods of commissioning, startup, shutdown, and tuning.

1. Oxides of Nitrogen (NOx): 50 tons/year
2. Carbon Monoxide (CO): 100 tons/year
3. Volatile Organic Compounds (VOC): 50 tons/year
4. Oxides of Sulfur (SOx): 100 tons/year

Verification: The project owner shall submit to the CPM and District the facility annual operating and emissions data demonstrating compliance with this condition as part of the fourth quarter's Quarterly Operation Reports **(AQ-SC11).**

AQ-30 The emissions of any single federal Hazardous Air Pollutant (HAP) shall not equal or exceed 10 tons, and the aggregate emissions of all federal HAPs shall not equal or exceed 25 tons in any rolling 12-calendar month period. Compliance with these single and aggregate HAP limits shall be based on a methodology approved by the District for the purpose of calculating HAP emissions for this permit. If emissions exceed these limits, the project owner shall apply to amend permit to reflect applicable federal Maximum Achievable Control Technology (MACT) standards and requirements in accordance with applicable provisions (including timing requirements) of 40 CFR Part 63.

Verification: The project owner shall submit to the CPM and District the facility annual operating data demonstrating compliance with this condition as part of the fourth quarter's Quarterly Operation Reports **(AQ-SC11).**

Ammonia - SCR

AQ-31 At least 90 days prior to the start of construction, the project owner shall submit to the District the final selection, design parameters and details of the selective catalytic reduction (SCR) and oxidation catalyst emission control systems. Such information may be submitted to the District as trade secret and confidential pursuant to District Rules 175 and 176.

Verification: The project owner shall submit to the CPM for review and District for approval final selection, design parameters and details of the SCR and oxidation catalyst emission control systems at least 90 days prior to the start of construction.

AQ-32 Before operating an SCR system, continuous monitors shall be installed on each SCR system to monitor or calculate, and record the ammonia injection rate (lbs/hour) and the SCR catalyst temperature (°F). The monitors shall be installed, calibrated and maintained in accordance with a District approved protocol. This protocol, which shall include the calculation methodology, shall be submitted to the District for written approval at least 60 days prior to initial startup of the gas turbines with the SCR system. The monitors shall be in full operation at all times when the turbine is in operation.

Verification: The project owner shall provide a protocol as required in the condition for the installation, calibration, and testing for the SCR system continuous monitors at least 60 days prior to SCR system use. The project owner shall submit to the CPM and District the SCR system operating data demonstrating compliance with this condition as part of the Quarterly Operation Reports **(AQ-SC11).**

AQ-33 Except during periods when the ammonia injection system is being tuned or one or more ammonia injection systems is in manual control (for compliance with applicable permits), the automatic ammonia injection system serving the SCR shall be in operation in accordance with manufacturer's specifications at all times when ammonia is being injected into the SCR. Manufacturer specifications shall be maintained on site and made available to district personnel upon request.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-34 The concentration of ammonia solution used in the ammonia injection system shall be less than 20% ammonia by weight. Records of ammonia solution concentration shall be maintained on site and made available to district personnel upon request.

Verification: The project owner shall maintain on site and provide on request of the CPM or District the ammonia delivery records that demonstrate compliance with this condition.

Definitions

AQ-35 For the purposes of this Authority to Construct, startup conditions shall be defined as the time fuel flow begins until the time that the unit complies with the emission limits specified in this Authority to Construct but in no case exceeding 30 minutes per occurrence. Shutdown conditions shall be defined as the time preceding the moment at which fuel flow ceases and during which the unit does not comply with the emission limits specified in this Authority to Construct but in no cases exceeding 30 minutes per occurrence. The Data Acquisition and Recording System (DAS), as required by 40 CFR75, shall record these events. This condition may be modified by the District based on field performance of the equipment.

Verification: The project owner shall submit to the CPM the CTG start-up and shut-down event duration data demonstrating compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC11**).

AQ-36 A CEMS protocol is a document approved in writing by the APCD M&TS division that describes the Quality Assurance and Quality Control procedures for monitoring, calculating and recording stack emissions from the unit.

Verification: The project owner shall maintain a copy of the CEMS protocol on site and provide it for inspection on request of the CPM or District.

AQ-37 Tuning is defined as adjustments to the combustion system that involves operating the unit in a manner such that the emissions control equipment may not be fully effective or operational. Only one gas turbine will be tuned at any given time. Tuning events shall not exceed 480 minutes in a calendar day nor exceed 40 hours in a calendar year. The District compliance division shall be notified at least 24 hours in advance of any tuning event.

Verification: The project owner shall notify the District and CPM at least 24 hours in advance of any tuning event. The project owner shall submit to the CPM the CTG operating data demonstrating compliance with tuning limitations identified in this condition as part of the Quarterly Operation Reports (**AQ-SC11**).

Testing

AQ-38 The project owner shall submit the proposed protocol for the source test 60 days prior to the proposed source test date to the District for approval. The project owner shall notify the District no later than 45 days prior to the proposed source test date and time.

Verification: The project owner shall submit to the CPM for review and the District for approval the initial source test protocol at least 60 days prior to the initial source test. The project owner shall notify the CPM and District no later than 45 days prior to the proposed source test date and time.

AQ-39 At least 60 days prior to initial startup of the gas turbines, the project owner shall submit a source test protocol to the District for approval. The source test protocol shall comply with the following requirements:

A. Measurements of NOX, CO, and O2 emissions shall be conducted in accordance with U.S. Environmental Protection Agency (U.S. EPA) methods 7E, 10, and 3A, respectively, and district Source Test, method 100, or alternative methods approved by the District and U.S. EPA;

B. Measurement of VOC emissions shall be conducted in accordance with U.S. EPA Methods 25A and/or 18, or alternative methods approved by the District and U.S. EPA;

C. Measurements of PM-10 emissions shall be conducted in accordance with U.S. EPA Methods 201A and 202 or alternative methods approved by the district and U.S. EPA;

D. Measurements of ammonia emissions shall be conducted in accordance with Bay Area Air Quality Management District ST-1B or an alternative method approved by the District and U.S. EPA;

E. Source testing shall be performed at the most frequently used load level, as specified in 40 CFR part 75 Appendix A Section 6.52.1.d, provided it is not less than 80% of the unit's rated load unless it is demonstrated to the satisfaction of the district that the unit cannot operate under these conditions . If the demonstration is accepted, then emissions source testing shall be performed at the highest achievable continuous level power level.

F. Measurements of opacity shall be conducted in accordance with U.S. EPA Method 9 or an alternative method approved by the District and U.S. EPA

G. Measurement of fuel flow shall be conducted in accordance with an approved test protocol.

Verification: The project owner shall submit to the CPM for review and the District for approval the initial source test protocol in compliance with requirements of this condition at least 60 days prior to the initial source test.

AQ-40 Each turbine shall be equipped with continuous monitors to measure or calculate, and record, the following operational characteristics of each unit:

1. Hours of operation (hours),

2. Natural gas flow rate (scfh),

3. Heat input rate (MMBtu /hr),

4. Exhaust gas flow rate (dscfm),

5. Exhaust gas temperature (ºF), and

6. Power output (gross MW).

7. Water (for NOx control) injection rate (lbs/hour) if equipped with water injection.

Verification: The project owner shall submit to the CPM for review and the District for approval a parametric monitoring protocol in compliance with this condition at least 60 days prior to the initial startup.

AQ-41 At least 60 days prior to the initial startup of the gas turbines, the project owner shall submit a turbine operation monitoring protocol, which shall include relevant calculation methodologies to the District for written approval. The monitors shall be installed, calibrated, and maintained in accordance with the protocol. The monitors should be in full operation at all times when the turbine is in operation. Calibration records for the continuous monitors shall be maintained on site and made available to the district upon request. The project owner shall make the site available for inspection of the turbine operation monitors and monitor maintenance records by representatives of the District, ARB, and the Energy Commissions.

Verification: The project owner shall submit to the CPM for review and the District for approval a turbine operation monitoring protocol in compliance with this condition at least 60 days prior to the initial startup.

AQ-42 The exhaust stacks for each turbine shall be equipped with source test ports and platforms to allow for the measurement and collection of stack gas samples consistent with all approved test protocols. The ports and platforms shall be constructed in accordance with District Method 3A, Figure 2, and approved by the District.

Verification: The project owner shall submit to the CPM for review and District for approval a stack test port and platform plan at least 60 days before the installation of the stack ports and platform.

AQ-43 This unit shall be source tested to demonstrate compliance with the NOx, CO, VOC, and ammonia emission standards of this permit, using District approved methods. The source test and the NOx and CO Relative Accuracy

Test Audit (RATA) tests shall be conducted in accordance with the applicable RATA frequency requirements of 40 CFR75, appendix b, sections 2.3.1 and 2.3.3.

Verification: The results and field data collected during source tests required by this condition shall be submitted to the CPM for review and the District for approval within 60 days of testing.

AQ-44 A Relative Accuracy Test Audit (RATA) and all other required certification tests shall be performed and completed on the CEMS in accordance with applicable provisions of 40 CFR part 75 Appendix A and B performance specifications. At least 30 days prior to the test date, the project owner shall submit a test protocol to the District for approval. Additionally, the District shall be notified a minimum of 21 days prior to the test so that observers may be present.

Verification: The project owner shall submit to the CPM for review and the District for approval the RATA certification test protocol at least 30 days prior to the RATA test and shall notify the CPM and District of the RATA test date at least 21 days prior to conducting the RATA and other certification tests.

AQ-45 If source testing will be performed by an independent contractor and witnessed by the District, a source test protocol shall be submitted to the District for written approval at least 30 days prior to source testing.

Verification: The project owner shall submit to the CPM for review and District for approval, if necessary based on the condition requirements, a source test protocol at least 30 days prior to the source test.

AQ-46 Within 45 days after completion of the source test or RATA, a final test report shall be submitted to the District for review and approval.

Verification: The project owner will submit all RATA or source test reports to the CPM for review and the District for approval within 45 days of the completion of those tests.

Continuous Emission Monitoring System (CEMS)

AQ-47 The project owner shall comply with the continuous emission monitoring requirements of 40 CFR Part 75.

Verification: The project owner shall submit to the CPM for review and the District for approval a CEMS monitoring protocol at least 60 days prior to the operation the CEMS.

AQ-48 At least 60 days prior to initial startup of the gas turbines, the project owner shall submit a turbine monitoring protocol to the District for written approval. The project owner shall make the site available for inspection of the turbine operation monitors and monitor maintenance records by representatives of the District, ARB, and the Energy Commission.

Verification: The project owner shall submit to the CPM for review and the District for approval a turbine monitoring protocol in compliance with this condition at least 60 days prior to the initial startup.

AQ-49 At least 60 days prior to initial startup of the gas turbines, the project owner shall submit a protocol to the District, for written approval, that show how the permanent CEMs will be able to meet all District monitoring requirements and measure NOx emissions at a level of 2.5 ppmv.

Verification: The project owner shall submit to the CPM for review and the District for approval a CEMS operating protocol at least 60 days prior to the operation the CEMS.

AQ-50 At least 60 days prior to the operation of the permanent CEMs, the project owner shall submit a CEMs operating protocol to the District for written approval. The project owner shall make the site available for inspection of the CEMs and CEMs maintenance records by representatives of the District, ARB, and the Energy Commission.

Verification: The project owner shall submit to the CPM for review and the District for approval a CEMS operating protocol at least 60 days prior to the operation the permanent CEMS.

AQ-51 A monitoring plan in conformance with 40 CFR 75.53 shall be submitted to U.S. EPA Region 9 and the District at least 45 days prior to the Relative Accuracy Test Audit test, as required in 40 CFR 75.62.

Verification: The project owner shall submit to the CPM for review and the District for approval a monitoring plan in compliance with this condition at least 45 days prior to the RATA test.

AQ-52 No later than 90 days after each unit commences commercial operation (defined for this condition as the instance when power is sold to the grid), a Relative Accuracy Test Audit (RATA) and other required certification tests shall be performed an completed on the CEMs in accordance with 40 CFR Part 75 Appendix A Specifications and Test Procedures. At least 60 days prior to the test date, the project owner shall submit a test protocol to the District for written approval. Additionally, the District shall be notified a minimum of 45 days prior to the test so that observers may be present. Within 30 days of completion of this test, a written test report shall be submitted to the District for approval.

Verification: The project owner shall submit to the CPM for review and the District for approval the RATA certification test protocol at least 60 days prior to the RATA test and shall submit to the CPM for review and the District for approval a copy of the written test report within 30 days after test completion The project owner shall also notify the CPM and District of the RATA test date at least 45 days prior to conducting the RATA and other certification tests.

AQ-53 The oxides of nitrogen (NOX) and oxygen (O2) CEMS shall be certified and maintained in accordance with applicable Federal Regulations including the

requirements of Sections 75.10 and 75.12 of Title 40, Code of Federal Regulations Part 75 (40 CFR 75), the performance specifications of Appendix A of 40 CFR 75, the quality assurance procedures of Appendix B of 40 CFR 75 and the CEMS protocol approved by the District. The carbon monoxide (CO) CEMS shall be certified and maintained in accordance with 40 CFR 60, Appendices B and F, unless otherwise specified in this permit, and the CEMS protocol approved by the District.

Verification: The project owner shall submit to the CPM for review and the District for approval a CEMS operating protocol as required by **AQ-50**. The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-54 Continuous emission monitoring system (CEMS) shall be installed and properly maintained and calibrated to measure, calculate and record the following, in accordance with the District approved CEMS protocol:

A. Percent oxygen (O2) in the exhaust gas (%);

B. Average concentration of oxides of nitrogen (NOX) for each continuous rolling 3-hour period, in parts per million (ppmv) corrected to 15% oxygen;

C. Average concentration of carbon monoxide (CO) for each continuous rolling 3-hour period, in parts per million (ppmv) corrected to 15% oxygen;

D. Annual mass emissions of oxides of nitrogen (NOX), in tons;

E. Annual mass emission of carbon monoxide (CO), in tons.

F. Natural gas flow rate to turbine in hscf/hr.

Verification: The project owner shall submit to the CPM for review and the District for approval a CEMS operating protocol as required by **AQ-50**. The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-55 The CEMS shall be in operation in accordance with the district approved CEMs monitoring protocol at all times when the turbine is in operation. A copy of the District approved CEMS monitoring protocol shall be maintained on site and made available to District personnel upon request.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-56 When the CEMS is not recording data and the turbine is operating, hourly NOx emissions for the annual emission calculations shall be determined in accordance with 40 CFR 75 Subpart C. Additionally, hourly CO emissions for annual emission calculations shall be determined using CO emission factors to be determined from source test emission factors and fuel consumption data, in terms of pounds per hour of CO for the gas turbine. Emission calculations used to determine hourly emission rates shall be reviewed and

approved by the District, in writing, before the hourly emission rates are incorporated into the CEMS emission data.

Verification: The project owner shall provide the District with all emission calculations required by this condition and shall provide notation of when such calculations are used in place of CEMS data as part of the Quarterly Operation Report (**AQ-SC11**).

AQ-57 Any violation of any emission standard as indicated by the CEMS shall be reported to the district's compliance division within 96 hours after such occurrence (H&S Code).

Verification: The project owner shall notify the District regarding any emission standard violation as required in this condition and shall document all such occurrences in each Quarterly Operation Report (**AQ-SC11**).

AQ-58 The CEMS shall be maintained and operated, and reports submitted, in accordance with the requirements of rule 19.2 Sections (d), (e), (f) (1), (f) (2), (f) (3), (f) (4) and (f) (5), and a CEMS protocol approved by the District. 24368

Verification: The project owner shall submit to the District the CEMS reports as required in this condition and shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-59 An operating log or data acquisition and handling system (DAHS) records shall be maintained either on site or at a district-approved alternate location to record actual times and durations of all startups and shut-downs, quantity of fuel used (scf) and energy generated (MW-hr), (monthly and annually by calendar year), hours of daily operation and total cumulative hours of operation (monthly and annually by calendar year).

Verification: The operating log or DAHS operating records will be provided as part of the Quarterly Operation Report (**AQ-SC11**). The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-60 Except for changes that are specified in the initial approved NOx monitoring protocol or a subsequent revision to that protocol that is approved in advance, in writing by the District, the District shall be notified in writing at least thirty (30) days prior to any planned changes made in the CEMS /DAHS (including the programmable logic controller) software which affects the value of data displayed on the CEMS / DAHS monitors with respect to the parameters measured by their respective sensing devices or any planned changes to the software that controls the ammonia flow to the SCR. Unplanned or emergency changes shall be reported within 96 hours.

Verification: The project owner shall submit to the CPM for review and the District for approval any revision to the CEMS/DAHS software, as required by this condition, to be approved in advance at least 30 days before any planned changes are made.

AQ-61 Fuel flow meters with an accuracy of +/- 2% shall be maintained to measure the volumetric flow rate corrected for temperature and pressure. Correction factors and constants shall be maintained on site and made available to the district upon request. The fuel flow meters shall meet the applicable quality assurance requirements of 40 CFR part 75, Appendix D, and Section 2.1.6.

Verification: The project owner shall submit to the CPM the natural gas usage data from the fuel flow meters as part of the Quarterly Operation Report (**AQ-SC11**).

Commissioning

AQ-62 Beginning at initial startup of each turbine, a Commissioning Period for each turbine shall commence. The Commissioning Period shall end 120 days after initial startup or immediately after written acceptance of clear custody and control of the equipment is turned over to the project owner, or after not more than 200 hours of gas turbine operation whichever comes first. During the Commissioning Period, only the emission limits specified in conditions 63 and 64 shall apply.

Verification: A log of the dates, times, and cumulative unit operating hours when fuel is being combusted during the commissioning period shall be maintained by the project owner. The project owner shall submit, commencing one month from the time of gas turbine first fire, a monthly commissioning status report throughout the duration of the commissioning phase that demonstrates compliance with the requirements listed in this condition. The monthly commissioning status report shall be submitted to the CPM by the 10th of each month for the previous month, for all months with turbine commissioning activities following the turbine first fire date. The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-63 During the Commissioning Period when operating without SCR or oxidation catalyst, the total aggregate NOx emissions from the equipment described in applications # 985708 and 985711 combined shall not exceed 100 pounds per hour, calculated as nitrogen dioxide and measured over each 1-clock hour period. This emission limit shall apply during all times the turbine is operating, including, but not limited to emissions during periods of commissioning, startup, shutdown, low load operation and tuning. (Rule 20.3(d)(2)(i))

Verification: The project owner shall provide the CPM CEMS data demonstrating compliance with this condition as part of the monthly commissioning status report (**AQ-62**).

AQ-64 During the Commissioning Period when operating without SCR or oxidation catalyst, the total aggregate CO emissions from the equipment described in applications # 985708 and 985711 combined shall not exceed 87.8 pounds per hour measured over each 1-clock hour period. This emission limit shall apply during all times that one or both turbines are operating, including, but not limited to emissions during periods of commissioning, startup, shutdown, low load operation and tuning. (Rule 20.3(d)(2)(i)).

Verification: The project owner shall provide the CPM CEMS data demonstrating compliance with this condition as part of the monthly commissioning status report (**AQ-62**).

AQ-65 Within 120 days or 200 hours of gas turbine operation, whichever comes first, after initial startup of each turbine, the project owner shall install post-combustion air pollution control equipment to minimize emissions from this equipment. Once installed, the post-combustion air pollution control equipment shall be maintained in good condition and, with the exception of periods during startup and shutdown, shall be in full operation at all times when the turbine is in stable operation.

Verification: The project owner shall provide the CPM District records demonstrating compliance with this condition as part of the monthly commissioning status report (**AQ-62**).

AQ-66 After the end of the Commissioning Period for each turbine, the project owner shall submit a written progress report to the District. This report shall include, a minimum, the date the Commissioning Period ended, the periods of startup, the emissions of NOx and CO during startup, and the emissions of NOx and CO during steady state operation. NOx and CO emissions shall be reported in both ppmv at 15% O2 and lbs/hour. This report shall also detail any turbine or emission control equipment malfunction, upset, repairs, maintenance, modifications, or replacements affecting emissions of air contaminants that occurred during the Commissioning Period.

Verification: The project owner shall provide the CPM and the District records demonstrating compliance with this condition as part of the final monthly commissioning status report (**AQ-62**).

AQ-67 Only one combustion turbine shall undergo commissioning at a time.

Verification: The project owner shall provide the CPM CEMS data demonstrating compliance with this condition as part of the monthly commissioning status report (**AQ-62**).

AQ-68 For the purpose of the Determination of Compliance and Authority to Construct, the period described as “on-going” operation of the turbines shall commence immediately following the end of the Commissioning Period. Conditions Numbers AQ-21 and AQ-22 shall continue to apply during on-going operations.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-69 Within 30 days after completion of the Commissioning Period, an initial emission source test shall be conducted by an independent, ARB approved tester at the project owner’s expense to show compliance with all applicable emission limits. A source test protocol shall be submitted to the District for

written approval at least 60 days prior to source testing. The source test protocol shall comply with the following requirements:

A. Measurements of NOx and CO emission concentrations, and O2 concentration shall be conducted in accordance with U.S. Environmental Protection Agency (U.S. EPA) methods 7E, 10, and 3A, respectively, and district Source Test, method 100, or alternative methods approved by the District and U.S. EPA;

B. Measurement of VOC emissions shall be conducted in accordance with U.S. EPA Methods 25A and/or 18, or alternative methods approved by the District and U.S. EPA;

C. Measurement of PM-10 emissions shall be conducted in accordance with U.S. EPA Method 201A and 202 or alternative methods approved by the District and U.S. EPA;

D. Measurements of ammonia emissions shall be conducted in accordance with Bay Area Air Quality Management District ST-1B or an alternative method approved by the District and U.S. EPA;

E. To determine compliance with NOx, CO, particulate matter and ammonia concentrations or emission limits of the equipment on this application, source testing shall be performed at the most frequently used load level, as specified in 40 CFR part 75 Appendix A Section 6.52.1.d, provided it is not less than 80% of the unit's rated load unless it is demonstrated to the satisfaction of the district that the unit cannot operate under these conditions. If the demonstration is accepted, then emissions source testing shall be performed at the highest achievable continuous level power level.

F. Measurement of opacity shall be conducted in accordance with U.S. EPA Method 9 or an alternative method approved by the District and U.S. EPA.

G. Measurement of fuel flow shall be conducted in accordance with an approved test protocol.

Verification: The project owner shall submit to the CPM for review and the District for approval the initial source test protocol in compliance with requirements of this condition at least 60 days prior to the initial source test.

AQ-70 The project owner shall submit the proposed protocol for the source test 60 days prior to the proposed source test date to both the District for approval. The project owner shall notify the District no later than 45 days prior to the proposed source test date and time.

Verification: The project owner shall submit to the CPM for review and the District for approval the initial source test protocol in compliance with requirements of this condition at least 60 days prior to the initial source test. The project owner shall submit a completed source test date and time notification form to the District at least 45 days before the proposed test date.

985710

Gas 965 brake horsepower (bhp) Cummins GTA38-G2 natural gas fueled black start engine, with catalytic converter and air to fuel ratio controller, driving a 625 kilowatt (KW) generator.

AQ-71 Project owner shall provide access, facilities, utilities and any necessary safety equipment, with the exception of personal protective equipment requiring individual fitting and specialized training, for source testing and inspection upon request of the District.

Verification: The project owner shall provide facilities, utilities, and safety equipment for source testing and inspections upon request of the District, ARB, and the Energy Commission.

AQ-72 Gaseous fuel engines shall use only gaseous fuel which contains no more than 10 grains of sulfur compounds, calculated as hydrogen sulfide, per 100 cubic feet dry gaseous fuel at standards conditions. Gaseous fuels include natural gas, propane, liquefied petroleum gas (LPG), butane. Gasoline engines shall use only California Reformulated Gasoline. (Rule 62).

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-73 Visible emissions including crank case smoke shall comply with Rule 50. (Rule 50)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-74 At no time shall the subject equipment described cause or contribute to a public nuisance. (Rule 51)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-75 A non-resettable engine hour meter shall be installed on this engine, maintained in good working order, and used for recording engine operating hours. If a meter is replaced, the Air Pollution Control District's Compliance Division shall be notified in writing within 10 calendar days. The written notification shall include the following information:

A. Old meter's hour reading.

B. Replacement meter's manufacturer name, model, and serial number if available and current hour reading on replacement meter.

C. Copy of receipt of new meter or of installation work order.

A copy of the meter replacement notification shall be maintained on site and made available to the Air Pollution Control District upon request. (Rule 69.4.1.)

Verification: The project owner shall provide notification to the District as required by this condition and shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-76 The engine operation shall not exceed 0.5 hours per day and 52 hours per calendar year for non-emergency purposes (testing and maintenance). (NSR, Rule 69.4.1)

Verification: The project owner shall submit to the CPM the black-start engine operating data demonstrating compliance with this condition as part of the Quarterly Operation Report (**AQ-SC11**).

AQ-77 The owner or operator shall conduct periodic maintenance of this engine and any add-on control equipment, as applicable, as recommended by the engine and control equipment manufacturer or as specified by any other maintenance procedure approved in writing in writing by the District. The periodic maintenance shall be conducted at least once each calendar year. (Rule 69.4.1)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-78 The owner or operator of the engine shall keep the following records: applicable fuel certification; manual of recommended maintenance provided by the manufacturer, or other maintenance procedure as approved in writing, in advance, by the District. These records shall be kept on site for at least the same period of time as the engine to which the records apply is located at the site. These records shall be made available to the District. (Rule 69.4.1)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-79 The owner or operator of this engine shall maintain an operating log containing, at a minimum, the following: dates and times of engine operation, indicating whether the operation was for non- emergency purposes or during an emergency situation and the nature of the emergency, if available (these records are not required if the total engine operations for any purpose, including emergency situation, do not exceed 52 hours in a calendar year); total cumulative hours of operation per calendar year, based on actual readings of engine hour meter or fuel meter; records of periodic maintenance including the dates maintenance, calibration or replacement were performed. (Rule 69.4.1)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-80 All operational and maintenance logs required by this permit shall be kept for a minimum of three years, unless otherwise indicated by the conditions of this permit, and these records shall be made available to the District upon request. (Rule 69.4.1)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

985711

373 bhp Cummins CFP11E-F10 diesel fueled emergency fire pump engine.

AQ-81 Project owner shall provide access, facilities, utilities and any necessary safety equipment, with the exception of personal protective equipment requiring individual fitting and specialized training, for source testing and inspection upon request of the District.

Verification: The project owner shall provide facilities, utilities, and safety equipment for source testing and inspections upon request of the District, ARB, and the Energy Commission.

AQ-82 Engine operation for maintenance and testing purposes shall not exceed 0.5 hour per day and 50 hours per calendar year. (NSR) (17 CCR §93115) (ATCM reportable)

Verification: The project owner shall submit to the CPM the fire pump engine operating data demonstrating compliance with this condition as part of the Quarterly Operation Report (**AQ-SC11**).

AQ-83 The engine shall only use ARB Diesel Fuel. (Rule 69.4.1, 17 CCR §93115)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-84 Visible emissions including crankcase smoke shall comply with Air Pollution Control District Rule 50. (Rule 50)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-85 The equipment described above shall not cause or contribute to public nuisance. (Rule 51)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-86 This engine shall not operate for non-emergency use during the following periods, as applicable:

A. Whenever there is any school sponsored activity, if engine is located on school grounds or

B. Between 7:30 and 3:30 PM on days when school is in session, if the engine is located within 500 feet of, but not on school grounds.

This condition shall not apply to an engine located at or near any school grounds that also serve as the student's place of residence (17 CCR §93115) (ATCM reportable).

Verification: The project owner shall submit to the CPM the engine operating data demonstrating compliance with this condition on request and shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-87 Engine operation in response to notification of an impending rotating outage, shall be restricted to the following condition:

A. The utility distribution company has ordered rotating outages in the control area where he engine is located,

B. The engine is operated no more than 30 minutes prior to the time when the utility distribution company officially forecasts a rotating outage in the cited control area, and

C. The engine operation is terminated immediately after the utility distribution company advises that a rotating outage is no longer in effect.

This condition shall not apply to engines operating pursuant to the rolling blackout reduction program as identified in 17 CCR 93115 and operating in accordance with 17 CCR 93115 (e)(2)(f). (17 CCR 93115) (ATCM reportable).

Verification: The project owner shall submit to the CPM the engine operating data demonstrating compliance with this condition on request and shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-88 A non-resettable engine hour meter shall be installed on this engine, maintained in good working order, and used for recording engine operating hours. If a meter is replaced, the Air Pollution Control District's Compliance Division shall be notified in writing within 10 calendar days. The written notification shall include the following information:

A. Old meter's hour reading.

B. Replacement meter's manufacturer name, model, and serial number if available and current hour reading on replacement meter.

C. Copy of receipt of new meter or of installation work order.

A copy of the meter replacement notification shall be maintained on site and made available to the Air Pollution Control District upon request. (Rule 69.4.1) (17 CCR §93115)

Verification: The project owner shall provide notification to the District as required by this condition and shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-89 The owner or operator shall conduct periodic maintenance of this engine and add-on control equipment, if any, as recommended by the engine and control equipment manufacturers or as specified by the engine servicing company's

maintenance procedure. The periodic maintenance shall be conducted at least once each calendar year. (Rule 69.4.1)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-90 The owner or operator of the engine shall maintain the following records on site for at least the same period of time as the engine to which the records apply is located at the site:

A. Documentation shall be maintained identifying the fuel as ARB diesel;

B. Manual of recommended maintenance provided by the manufacturer, or maintenance procedures specified by the engine servicing company; and

C. Records of annual engine maintenance, including the date the maintenance was performed.

These records shall be made available to the Air Pollution Control District upon request. (Rule 69.4.1)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-91 The owner or operator of this equipment shall maintain a monthly operating log containing, at a minimum, the following:

A. Dates and times of engine operation, indicating whether the operation was for maintenance and testing purposes or emergency use; and, the nature of the emergency, if known;

B. Hours of operation for all uses other than those specified above and identification of the nature of that use. (Rule 69.4.1) (17 CCR §93115)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-92 All operational and maintenance logs required by this permit shall be kept a minimum of 36 months from their date of creation unless otherwise indicated by the conditions of this permit. The records shall be maintained onsite for a minimum of 24 months from their date of creation. Records for the last 24 months of operation shall be made available to the Air Pollution Control District upon request. Records for operation for the last 25 to 36 months shall be made available to the Air Pollution Control District within 5 working days of request.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

Additional General Conditions

AQ-93 All records required by these conditions shall be maintained on site for a minimum of five years and made available to the District upon request.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

ACRONYMS

AAQS	Ambient Air Quality Standard
AERMOD	ARMS/EPA Regulatory Model
AFC	Application for Certification
APCD	Air Pollution Control District (SDAPCD)
AQCMM	Air Quality Construction Mitigation Manager
AQCMP	Air Quality Construction Mitigation Plan
AQMP	Air Quality Management Plan
AQIA	Air Quality Impact Assessment
ARB	California Air Resources Board
ARM	Ambient Ratio Method
ATC	Authority to Construct
ATCM	Airborne Toxic Control Measure
BACT	Best Available Control Technology
BARCT	Best Available Retrofit Technology
bhp	brake horsepower
Btu	British thermal unit
CAAQS	California Ambient Air Quality Standard
CEC	California Energy Commission (or Energy Commission)
CEQA	California Environmental Quality Act
CEM	Continuous Emission Monitor
CEMS	Continuous Emission Monitoring System
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CTG	Combustion Turbine Generator
CPM	(CEC) Compliance Project Manager
CVEUP	Chula Vista Energy Upgrade Project
DAHS	Data Acquisition and Handling System
DAS	Data Acquisition and Recording System
dscf	dry standard cubic foot

EIR	Environmental Impact Report
ERC	Emission Reduction Credit
FDOC	Final Determination Of Compliance
GCL	Gregory Canyon Landfill
GHG	Greenhouse Gas
gr	Grains (1 gr ≅ 0.0648 grams, 7000 gr = 1 pound)
GTE	Gas Turbine Engine
HAP	Hazardous Air Pollutant
HARP	Hotspots Analysis Reporting Program
hp	horsepower
H_2S	Hydrogen Sulfide
ISCST3	Industrial Source Complex Short Term, version 3
LAER	Lowest Achievable Emission Rate
lbs	pounds
LORS	Laws, Ordinances, Regulations and Standards
MACT	Maximum Achievable Control Technology
MCR	Monthly Compliance Report
mg/m^3	milligrams per cubic meter
MMBtu	Million British thermal units
m/s	meters per second
M&TS	Monitoring and Technical Services (SDAPCD)
MW	Megawatts (1,000,000 Watts)
NAAQS	National Ambient Air Quality Standard
NH_3	Ammonia
NO	Nitric Oxide
NO_2	Nitrogen Dioxide
NO_3	Nitrates
NOx	Oxides of Nitrogen *or* Nitrogen Oxides
NSPS	New Source Performance Standard
NSR	New Source Review
O_2	Oxygen
O_3	Ozone
OGP	Orange Grove Project
OLM	Ozone Limiting Method
PDOC	Preliminary Determination Of Compliance
PM	Particulate Matter
PM10	Particulate Matter less than 10 microns in diameter

PM2.5	Particulate Matter less than 2.5 microns in diameter
ppm	Parts Per Million
ppmv	Parts Per Million by Volume
ppmvd	Parts Per Million by Volume, Dry
PSD	Prevention of Significant Deterioration
PTO	Permit to Operate
RATA	Relative Accuracy Test Audit
RDCN	Remote Data Collection Node
RMQ	Rosemary's Mountain Quarry
ROG	Reactive Organic Gases
SA	Staff Assessment (this document)
scf	Standard Cubic Feet
SCR	Selective Catalytic Reduction
SDAB	San Diego Air Basin
SDAPCD	San Diego Air Pollution Control District
SDG&E	San Diego Gas and Electric
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
SO_3	Sulfate
SOx	Oxides of Sulfur
SR	State Route
T-BACT	Best Available Control Technology for Toxics
U.S. EPA	United States Environmental Protection Agency
$\mu g/m^3$	Microgram per cubic meter
VOC	Volatile Organic Compounds

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AIR APPENDIX A

Greenhouse Gas Emissions

Matthew Layton, P.E.

SUMMARY OF CONCLUSIONS

The Orange Grove Project (OGP) is a peaking project that would likely operate infrequently and the project's emissions per MWh are expected to be considerably lower than those of the existing power plant and other peaking power plants that the project would replace and, thus, would contribute to continued improvement of the overall WECC system GHG emission rate average. Moreover, even if it were not replacing higher GHG emitting power plants, it would be speculative to conclude that the project would result in a cumulatively significant GHG impact. Staff recommends reporting of the GHG emissions as the Air Resources Board develops greenhouse gas regulations and/or trading markets required by the California Global Warming Solutions Act of 2006 (AB 32). The project may be subject to additional reporting requirements and GHG reduction or trading requirements as these regulations become more fully developed and implemented.

Staff concludes that the short-term emission of greenhouse gases during construction would be sufficiently reduced and would, therefore, not be significant.

The Orange Grove Project, as a peaking project with an enforceable operating limitation less than 60% of capacity, is not subject to the requirements of SB 1368 and the Greenhouse Gas Emission Performance Standard.

INTRODUCTION

Greenhouse gas (GHG) emissions are not criteria pollutants, but they are discussed in the context of cumulative impacts. The State has demonstrated a clear willingness to address global climate change though research, adaptation and inventory reductions. In that context, staff evaluates the GHG emissions from the proposed project, presents information on GHG emissions related to electricity consumption, and describes the applicable GHG standards and requirements.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

The following federal, state, and local laws and policies pertain to the control and mitigation of greenhouse gas emissions. Staff's analysis examines the project's compliance with these requirements.

Air Quality Appendix Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable Law	Description
State	
AB 32	California Global Warming Solutions Act of 2006. This act requires ARB to enact standards that will reduce GHG emission to 1990 levels. Electricity production facilities will be regulated.
SB 1368	Greenhouse Gas Emission Performance Standard. This regulation prohibits utilities from entering into long-term contracts with any baseload facility that does not meet a greenhouse gas emission standard of 0.5 metric tonnes CO_2/MWh (1,100 lbs CO_2/MWh)

GLOBAL CLIMATE CHANGE AND ELECTRICITY PRODUCTION

There is general scientific consensus that climate change is occurring and that human activity contributes in some measure (perhaps substantially) to that change. Man-made emissions of greenhouse gases, if not sufficiently curtailed, are likely to contribute further to continued increases in global temperatures. Indeed, the California Legislature finds that "[g]lobal warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California" (Cal. Health & Safety Code, Sec. 38500, Division 25.5, Part 1).

In 1998, the Energy Commission identified a range of strategies to prepare for an uncertain climate future, including a need to account for the environmental impacts associated with energy production, planning, and procurement (CEC 1998, p.5). In 2003, the Energy Commission recommended that the state require reporting of greenhouse gases (GHG) or global climate change[1] emissions as a condition of state licensing of new electric generating facilities (CEC 2003, IEPR p. 42). In 2006, California enacted the California Global Warming Solutions Act of 2006 (AB 32). It requires the California Air Resources Board (ARB) to adopt standards that will reduce statewide GHG emissions to statewide GHG emissions levels in 1990, with such reductions to be achieved by 2020.[2] To achieve this, ARB has a mandate to define the 1990 emissions level and achieve the maximum technologically feasible and cost-effective GHG emission reductions.

The ARB adopted early action GHG reduction measures in October 2007, adopted mandatory reporting requirements and the 2020 statewide target in December, 2007, and plans to establish statewide emissions caps by economic "sectors" in 2008. By January 1, 2009, ARB will adopt a scoping plan that will identify how emission reductions will be achieved from significant sources of GHG via regulations, market mechanisms, and other actions. ARB staff will then draft regulatory language to

[1] Global climate change is the result of greenhouse gases, or emissions with global warming potentials, affecting the energy balance, and thereby, climate of the planet. The term greenhouse gases (GHG) and global climate change (GCC) gases are used interchangeably.

[2] Governor Schwarzenegger has also issued Executive Order S-3-05 establishing a goal of 80% below 1990 levels by 2050.

implement its plan and will hold additional public workshops on each measure, including market mechanisms (ARB 2006). The regulations must be effective by January 1, 2011 and mandatory compliance commences on January 1, 2012.

Examples of strategies that the state might pursue for managing GHG emissions in California, in addition to those recommended by the Energy Commission and the Public Utilities Commission, are identified in the California Climate Action Team's Report to the Governor (CalEPA 2006). Others are being established by ARB during its 2008 scoping plan development process. Some strategies focus on reducing consumption of petroleum across all areas of the California economy. Improvements in transportation energy efficiency (fuel economy) and land use planning and alternatives to petroleum-based fuels are slated to provide substantial reductions by 2020 (CalEPA 2006). It is possible that GHG reductions mandated by ARB will be non-uniform or disproportional across emitting sectors, in that most reductions will be based on cost-effectiveness (i.e., the "most bang for the buck"). For example, the ARB proposes a 40% reduction in GHG from the electricity sector, even though that sector currently only produces 25% of the state GHG emissions. In response, in September 2008 the Energy Commission and the Public Utilities Commission provided recommendations (CPUC 2008) to ARB on how to achieve such reductions through both programmatic and regulatory approaches, and identified regulation points should ARB decide that a multi-sector cap and trade system is warranted.

The Energy Commission's 2007 Integrated Energy Policy Report (IEPR) also addresses climate change within the electricity, natural gas, and transportation sectors. For the electricity sector, it recommends such approaches as pursuing all cost-effective energy efficiency measures and meeting the Governor's stated goal of a 33% renewable portfolio standard.

SB 1368[3], also enacted in 2006, and regulations adopted by the Energy Commission and the Public Utilities Commission pursuant to the bill, prohibits California utilities from entering into long-term commitments with any baseload facilities that exceed the Emission Performance Standard of 0.500 metric tonnes CO_2 per megawatt-hour[4] (1,100 pounds CO_2/MWh). Specifically, the Emission Performance Standard applies (EPS) to baseload power from new power plants, new investments in existing power plants, and new or renewed contracts with terms of five years or more, including contracts with power plants located outside of California.[5] If a project, instate or out of state, plans to sell baseload electricity to California utilities, the utilities will have to demonstrate that the project complies with the EPS. Baseload is defined as units which operate at a capacity factor higher than 60% of the year. As a project with a permit operating restriction of less than 60% of the year, OGP is not required to comply with the SB 1368 EPS.

In addition to these programs, California is involved in the Western Climate Initiative, a multi-state and international effort to establish a cap and trade market to reduce

[3] Public Utilities Code § 8340 et seq.

[4] The Emission Performance Standard only applies to carbon dioxide, and does not include emissions of other greenhouse gases converted to carbon dioxide equivalent.

[5] See Rule at http://www.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/64072.htm

greenhouse gas emissions in the west. The timelines for the implementation of this program are similar to those of AB 32, with full roll-out beginning in 2012. And as with AB 32, the electricity sector has been a major focus of attention.

PROJECT GREENHOUSE GAS EMISSIONS

The generation of electricity using fossil fuels can produce air emissions known as greenhouse gases in addition to the "criteria air pollutants" that have been traditionally regulated under the federal and state Clean Air Acts. Greenhouse gas emissions contribute to the warming of the earth's atmosphere, leading to climate change. For fossil fuel-fired power plants, these include primarily carbon dioxide, with much smaller amounts of nitrous oxide (N_2O, not NO or NO_2, which are commonly known as NOx or oxides of nitrogen), and methane (CH_4 - unburned natural gas). Also included are sulfur hexafluoride (SF_6) from high voltage equipment, and hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs) from refrigeration/chiller equipment. GHG emissions from the electricity sector are dominated by CO_2 emissions from the carbon-based fuels; other sources of GHG emissions are small and also are more likely to be easily controlled or reused/recycled, but are nevertheless documented here as some of the compounds have very large relative global warming potentials.

CONSTRUCTION

Construction of industrial facilities such as power plants requires coordination of numerous equipment and personnel. The concentrated on-site activities result in short-term, unavoidable increases in vehicle and equipment emissions that include greenhouse gases. **Greenhouse Gas Table 1** shows what the proposed project, as permitted, could potentially emit in greenhouse gases during construction. All emissions are converted to CO_2-equivalent and totaled.

Greenhouse Gas Table 1
OGP, Estimated Potential Construction Greenhouse Gas Emissions

Construction Element	CO_2 Equivalent (metric tonnes) [a]
Site Grading and Preparation	165
Main Site Construction – Civil, Mechanical, Electrical	504
Gas Line Construction	134
Construction Total	803

Source: Staff estimate based on construction data provided by the applicant (OGE 2008a), where staff used the latest ARB GHG emission factor recommendations (ARB 2008a).
a. One metric tonne (mt) equals 1.1 short tons or 2,204.6 pounds or 1,000 kilograms

OPERATIONS

The proposed OGP would be a peaking power facility that would be limited to an equivalent of 3,200 hours of full load operation. The two General Electric LM6000 gas turbines are fired with natural gas. There will also be a small amount of GHG emissions from the diesel-fueled emergency and fire pump engines and hydrofluorocarbons (HFCs) emissions from chiller cooling fluid leaks; however, no new sulfur hexafluoride containing equipment has been proposed for the project. The employee and water

delivery traffic GHG emissions are also included in the operating emission GHG totals, even though they are negligible in comparison with the gas turbine GHG emissions.

Greenhouse Gas Table 2 shows what the proposed project, as permitted, could potentially emit in greenhouse gases on an annual basis. All emissions are converted to CO_2-equivalent and totaled. Electricity generation GHG emissions are dominated by CO_2 emissions from the carbon-based fuels; other sources of GHG are small and also are more likely to be easily controlled or reused/recycled, but are nevertheless documented here as some of the compounds have very large relative global warming potentials.

Greenhouse Gas Table 2
OGP, Estimated Potential Operating Greenhouse Gas Emissions – Permit Basis

	Project Emissions (metric tonnes [a] per year)	Global Warming Potential [b]	CO_2 Equivalent (metric tonnes per year)
Carbon Dioxide (CO_2)	161,744	1	161,744
Methane (CH_4)	2.8	21	58
Nitrous Oxide (N_2O)	0.3	310	95
Hexafluoride (SF_6)	0	23,900	0
Hydrofluorocarbons (HFCs)	0.003	1,300[c]	4
Perfluorocarbons (PFCs)	0	7,850 [d]	0
Total Project GHG emissions – mt CO_2–eq per year			161,901
Total Project MWh per year (net) [e]			307,264
Project CO_2 Emissions Performance - mt CO_2/MWh			0.526
Project GHG Emissions Performance - mt CO_2-eq/MWh			0.527

Sources: OGE 2008a and TRC 2008f where staff updated the natural gas GHG emissions factors to use the latest ARB recommendations (ARB 2008a).
a. One metric tonne (mt) equals 1.1 short tons or 2,204.6 pounds or 1,000 kilograms.
b. The global warming potential is a measure of the chemicals' warming properties and lifetime in the atmosphere relative to CO_2. The value shown is based on the emission factors from the California Climate Action Registry's Appendix to the General Reporting Protocol: Power Utility Reporting Protocol (CCAR 2005).
c. The proposed chiller cooling fluid HFC-134a has a warming potential of 1,300.
d. This figure is an average GWP for the two PFCs, CF_4 and C_2F_6.
e. This reflects net base load power for 3,200 hours.

The proposed project would be permitted, on an annual basis, to emit over one hundred sixty thousand metric tonnes of CO_2-eq per year if operated at its maximum permitted level, but this is extremely unlikely as shown by comparing actual capacity factors from other comparable San Diego County peaker facilities (see Air Quality Section).

The expected maximum annual GHG criteria emissions are well below the permitted maximum value shown in GREENHOUSE GAS Table 2, which would occur if the project were to operate at maximum permitted levels. The maximum annual GHG emissions based on a 13.7% capacity factor, used for criteria pollutant mitigation, would be approximately 60,000 metric tons of CO2-eq per year; and the maximum expected long term emissions would be less than 22,000 metric tonnes of CO2-eq per year (assuming a 5% project life capacity factor). As the capacity factor decreases so does the project's overall efficiency which will cause the actual project GHG emissions to increase slightly per MWh. For comparison the similarly designed Riverside Energy

Resource Center had actual GHG emissions of 0.542 mt CO_2-eq /MWh from their LM600 gas turbines for a two year period that operated with an overall capacity factor of just less than 5%.

Since the project's permit limits operation to less than a 60% annual capacity factor, it does not need to meet the EPS of 0.500 mt CO_2/MWh.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Staff assesses three kinds of impacts: construction, operation, and cumulative effects. As the name implies, construction impacts result from the emissions occurring during the construction of the project. The operation impacts result from the emissions of the proposed project during operation. Cumulative impacts analysis assesses the impacts that result from the proposed project's incremental effect viewed over time.

CONSTRUCTION IMPACTS

Staff does not believe that the small GHG emission increases from construction activities would be significant for several reasons. First, the period of construction will be short-term and the emissions intermittent during that period, not ongoing during the life of the project. Additionally, control measures that staff recommends, such as limiting idling times and requiring, as appropriate, equipment that meet the latest emissions standards would further minimize greenhouse gas emissions since staff believes that the use of newer equipment will increase efficiency and reduce GHG emissions and be compatible with low-carbon fuel (e.g., bio-diesel and ethanol) mandates that will likely be part of the ARB regulations to reduce GHG from construction vehicles and equipment.

DIRECT/INDIRECT OPERATION IMPACTS AND MITIGATION

The proposed OGP promotes the state's efforts to increase electrical generation efficiencies and reduce the amount of natural gas used by electricity generation and, thus, greenhouse gas emissions. As the 2007 Integrated Energy Policy Report (CEC 2007a) noted:

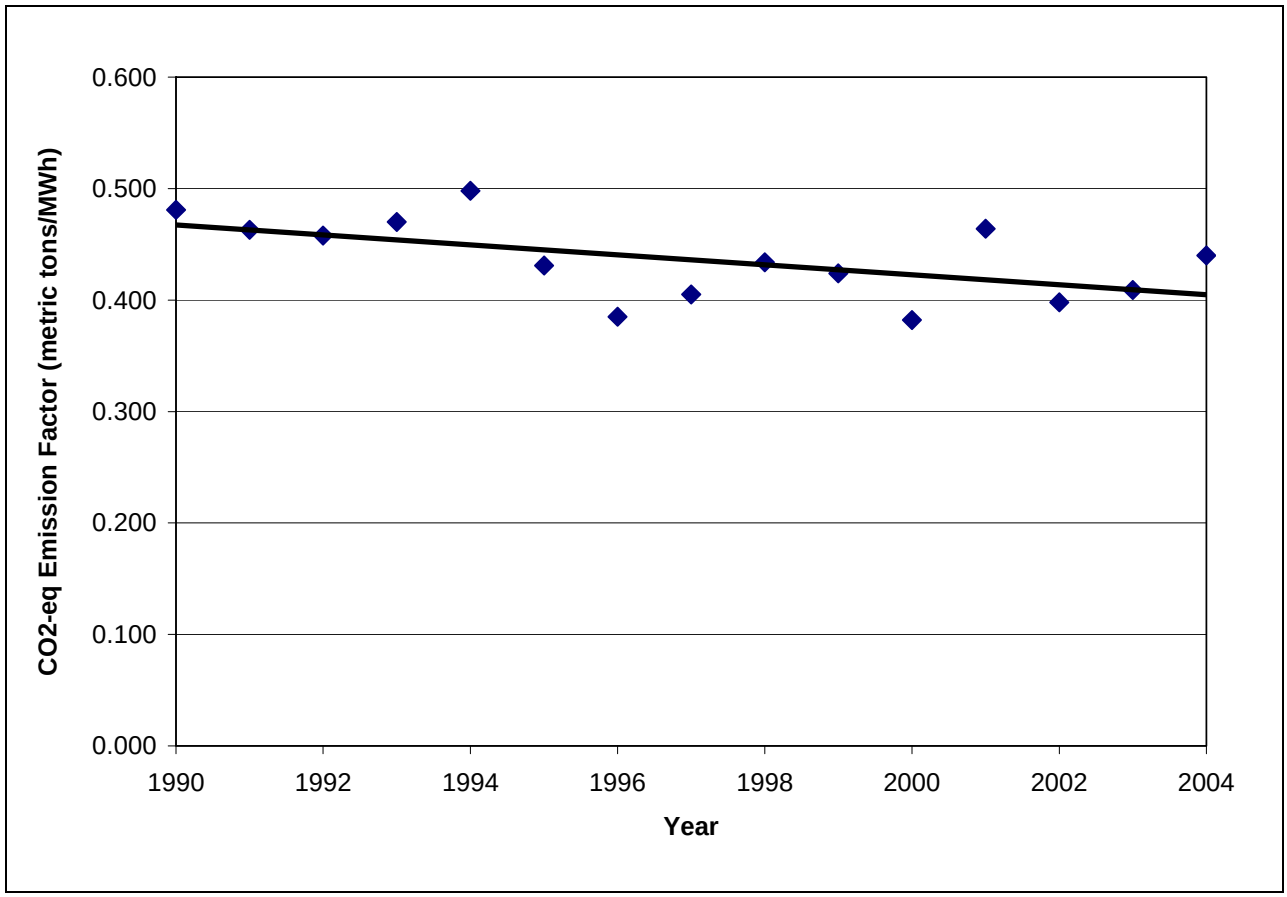
> *New natural gas-fueled electricity generation technologies offer efficiency, environmental, and other benefits to California, specifically by reducing the amount of natural gas used—and with less natural gas burned, fewer greenhouse gas emissions. Older combustion and steam turbines use outdated technology that makes them less fuel- and cost-efficient than newer, cleaner plants.… The 2003 and 2005 IEPRs noted that the state could help reduce natural gas consumption for electric generation by taking steps to retire older, less efficient natural gas power plants and replace or repower them with new, more efficient power plants. (CEC 2007a, p. 184)*

Thus, in the context of the Energy Commission's Integrated Energy Policy Report, the OGP likely replacement of older existing plant capacity furthers the state's strategy to promote efficiency and reduce fuel use and GHG emissions.

System Averages

Because most power plants are interconnected to a utility grid, and in turn to the Western Electricity Coordinating Council (WECC), it is also important to look at the proposed project in the context of all electricity systems delivering electricity to California consumers. **Air Quality Figure 1** shows the trends in GHG emission rates for each MWh consumed in California. From 1990 to 2004, California electricity became almost 20% "cleaner" on a GHG basis. This improvement was due in part to retirements of dirtier, less efficient plants, despite electricity demand growth of almost 20% from 1990 to 2004. Note that the trend line, a linear regression of the annual GHG emission rates, is a better representation of the statewide GHG emission rates than the actual number in any one year. GHG emissions and electricity consumption can vary from year to year due to variations in the availability of hydroelectric power, economic activity, and anomalous events such as the energy crisis of 2000-2001 and unusually warm weather conditions in 2004.

Greenhouse Gas Figure 1
GHG Emissions per Megawatt-hour Consumed in California



Source: ARB 2008b and CEC 2007b.

The proposed project, if it operates at its maximum permitted level, would have a GHG emission rate (approximately 0.53 mt CO_2-eq/MWh) that is greater than the system wide average (the trend line in 2004 is approximate 0.400 mt CO_2-eq/MWh). However, the project should not result in a net increase in global GHG emissions because it

would likely operate to replace energy from existing less efficient peaking power sources in the San Diego Area and, thus, would contribute to continued improvement of the overall WECC system GHG emission rate average.

However, even considering if the project cannot be directly attributed to replace higher-emitting existing local power plant capacity, it would be difficult to conclusively determine whether the project would result in a net increase in GHG emissions, for several reasons. Because of the complex interchange among facilities that make up California's electricity system, it is possible that this project could displace electricity that may have otherwise been generated by more GHG intensive facilities, such as out-of-state coal plants or local old inefficient peaking units. Additionally, facilities of this nature, with quick-start capabilities, are needed to support California's efforts to increase use of renewable resources.

Indeed, the 2007 Integrated Energy Policy Report identifies natural gas generation as a "complementary strategy to meet greenhouse gas emission reductions." It fills the gap that cannot be currently served by renewable generation, provides system stability to integrate new renewable generation, and may ultimately be necessary to displace imported coal generation, which has much higher GHG emissions. As stated in the 2007 IEPR:

> *Growth in natural gas used to generate electricity may exceed even these estimates under certain greenhouse gas reduction measures. For example, scenario analyses calculated that if a $60 per ton price were attached to CO_2 emissions, projected levels of coal-generated electricity in the WECC would decline by about 30-4% in 2020. As a result, natural gas burned to generate electricity in California would increase by about 20-70% depending on the amount of preferred resources. …*
>
> *Reducing the amount of coal used to generate electricity with a combination of preferred resources and natural gas and in the context of $60 per ton of carbon charge increases natural gas use in California and throughout the WECC.*
>
> *Natural gas is and will remain the major fuel in California's supply portfolio and must be used prudently as a complementary strategy to reduce greenhouse gas emissions. Not only does the state have a mandate to cut greenhouse gas emissions, it also has a responsibility to provide a reliable and affordable fuel source for home and business use. (CEC 2007a, p. 186)*

Therefore, even though we can identify how many gross GHG emissions are attributable to a project, it is difficult to determine whether this will result in a net increase of these emissions, and, if so, by how much. It would, thus, be speculative to conclude that any given electricity generation project results in a cumulatively significant adverse impact resulting from greenhouse gas emissions.

Additionally, the quickly evolving GHG regulatory efforts, currently being formulated, may shortly establish the best *fora* for addressing GHG emissions from power plants rather than attempting to do so on an ad hoc or plant-by-plant basis. The applicant's goal is to

have the OGP project operational by summer 2009. ARB will have set forth each sector's reduction requirements as of January of 2009, followed by the adoption of specific regulations by January of 2011.

Ultimately, ARB's AB 32 regulations will address both the degree of electricity generation emissions reductions, and the method by which those reductions will be achieved, through the programmatic approach currently under its development. That regulatory approach will presumably address emissions not only from the newer, more efficient, and lower emitting facilities licensed by the Commission, but also the older, higher-emitting facilities not subject to any GHG reduction standard that this agency could impose. This programmatic approach is likely to be more effective in reducing GHG emissions overall from the electricity sector than one that merely relies on displacing out-of-state coal plants ("leakage") or older "dirtier" facilities.

As ARB codifies accurate GHG inventories and methods, it may become apparent that relative contributions to the inventories may not correlate to relative ease and cost-effectiveness of the GHG emission reductions necessary to achieve the 1990 GHG level. Though it has not yet been determined, the electricity sector may have to provide less or more GHG reductions than it would have otherwise been responsible for on a pro-rata basis.

To facilitate ARB's future regulatory regime, staff recommends Condition of Certification **GHG-1**, which requires the project owner to report the quantities of relevant GHGs emitted as a result of electric power production until such time that AB 32 is implemented and its reporting requirements are in force. It is possible that no reporting will ever be required by this condition if ARB's reporting requirements are in force prior to the first calendar year of plant operation. However, staff believes that **GHG-1**, with the reporting of GHG emissions, will enable the project to be consistent with the policies described above and the regulations that ARB adopts, and provide the information to demonstrate compliance with any applicable EPS that could be enacted in the next few years. The GHG emissions to be reported in **GHG-1**, are carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, HFCs and PFCs emissions that are directly associated with the production and transmission of electric power.

CUMULATIVE IMPACTS

Cumulative impacts are defined as "two or more individual effects which, when considered together, are considerable or . . . compound or increase other environmental impacts" (CEQA Guidelines § 15355). "A cumulative impact consists of an impact that is created as a result of a combination of the project evaluated in the EIR together with other projects causing related impacts" (CEQA Guidelines § 15130[a][1]). Such impacts may be relatively minor and incremental, yet still be significant because of the existing environmental background, particularly when one considers other closely related past, present, and reasonably foreseeable future projects.

This entire assessment is a cumulative impact assessment. The project alone would not be sufficient to change global climate, but would emit greenhouse gases and therefore has been analyzed as a potential cumulative impact in the context of existing GHG regulatory requirements and GHG energy policies.

COMPLIANCE WITH LORS

The project will be subject to compliance with AB 32 requirements once they are determined by ARB. How the project will comply with these ARB requirements is speculative at this time but compliance will be mandatory. The GHG emissions reporting requirement under **GHG-1** does not imply that the project, as defined, will comply with the potential reporting and reduction regulations being formulated under AB 32. The project may have to provide additional reports and GHG reductions, depending on the reporting requirements of the new regulations expected from ARB.

Since this power project would be permitted for less than a 60% annual capacity factor, and would be considered a peaking facility, it is not subject to the requirements of SB 1368 and the Emission Performance Standard.

NOTEWORTHY PUBLIC BENEFITS

No greenhouse gas related noteworthy public benefits have been identified.

CONCLUSIONS

The OGP project would only be used when called upon to supply power during peak load demands. It would be speculative to conclude that the project would result in a cumulatively significant GHG impact. AB 32 emphasizes that GHG emissions reductions must be “big picture” reductions that do not lead to “leakage” of such reductions to other states or countries. If a gas-fired power plant is not built in California, electricity to serve the load will come from another generating source. That could be renewable generation like wind or solar, but it could also be from higher carbon emitting sources such as out-of-state coal imports or old inefficient peaking units that are a still a significant part of the resource mix that serves California.

Staff does not believe that the small GHG emission increases from construction activities would be significant for several reasons. First, the period of construction will be short-term and the emissions intermittent during that period, not ongoing during the life of the project. Additionally, control measures that staff recommends, such as limiting idling times and requiring, as appropriate, equipment that meet the latest emissions standards would further minimize greenhouse gas emissions since staff believes that the use of newer equipment will increase efficiency and reduce GHG emissions and be compatible with low-carbon fuel (e.g., bio-diesel and ethanol) mandates that will likely be part of the ARB regulations to reduce GHG from construction vehicles and equipment. For all these reasons, staff concludes that the short-term emission of greenhouse gases during construction would be sufficiently reduced and would, therefore, not be significant.

Since this power project would be permitted for less than a 60% annual capacity factor, and could be considered a peaking facility, it is not subject to the requirements of SB 1368 and the Emission Performance Standard.

The Staff has proposed a condition of certification, **GHG-1**, which is the Commission Greenhouse Gas interim reporting requirement that is applicable until the facility falls under AB 32 required reporting.

PROPOSED CONDITIONS OF CERTIFICATION

Staff recommends the following condition of certification to address the greenhouse gas impacts associated with the construction and operation of the OGP project.

STAFF CONDITION

GHG-1 Until the California Global Warming Solutions Act of 2006 (AB 32) is implemented, the project owner shall either participate in a GHG registry approved by the CPM, or report on a annual basis to the CPM the quantity of greenhouse gases (GHG) emitted as a direct result of facility electricity production.

The project owner shall maintain a record of fuels types and carbon content used on-site for the purpose of power production. These fuels shall include but are not limited to each fuel type burned: (1) in combustion turbines, (2) HRSGs (if applicable) or auxiliary boiler (if applicable), (4) internal combustion engines, (4) flares, and/or (5) for the purpose of startup, shutdown, operation or emission controls.

The project owner may perform annual source tests of CO_2 and CH_4 emissions from the exhaust stacks while firing the facility's primary fuel, using the following test methods or other test methods as approved by the CPM. The project owner shall produce fuel-based emission factors in units of lbs CO_2 equivalent per MMBtu of fuel burned from the annual source tests. If a secondary fuel is approved for the facility, the project owner may also perform these source tests while firing the secondary fuel.

Pollutant	Test Method
CO_2	EPA Method 3A
CH_4	Protocol: EPA Method 18 (VOC measured as CH_4)

As an alternative to performing annual source tests, the project owner may use the Intergovernmental Panel on Climate Change (IPCC) Methodologies for Estimating Greenhouse Gas Emissions (MEGGE). If MEGGE is chosen, the project owner shall calculate the CO_2, CH_4 and N_2O emissions using the appropriate fuel-based carbon content coefficient (for CO_2) and the appropriate fuel-based emission factors (for CH_4 and N_2O).

The project owner shall convert the N_2O and CH_4 emissions into CO_2 equivalent emissions using the current IPCC Global Warming Potentials (GWP). The project owner shall maintain a record of all SF_6 that is used for replenishing on-site transformers. At the end of each reporting period, the

project owner shall total the mass of SF_6 used and convert that to a CO_2 equivalent emission using the IPCC GWP for SF_6. The project owner shall maintain a record of all PFCs and HFCs that are used for replenishing on-site refrigeration and chillers directly related to electricity production. At the end of each reporting period, the project owner shall total the mass of PFCs and HFCs used and convert that to a CO_2 equivalent emission using the IPCC GWP.

On an annual basis, the project owner shall report the CO_2 and CO_2 equivalent emissions from the described emissions of CO_2, N_2O, CH_4, SF_6, PFCs, and HFCs.

Verification: The project annual greenhouse gas emissions shall be reported, as a CO2 equivalent, by the project owner to a climate action registry approved by the CPM, or to the CPM as part of the fourth Quarterly or the annual Air Quality Report, until such time that GHG reporting requirements are adopted and in force for the project as part of the California Global Warming Solutions Act of 2006.

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BIOLOGICAL RESOURCES

Testimony of Susan Sanders

SUMMARY OF CONCLUSIONS

The Orange Grove Project (OGP) would be located in an unincorporated region of northern San Diego County. The project area encompasses abandoned orchards, dairies and other highly disturbed areas, but also includes native plant communities such as coastal sage scrub and riparian forest along the San Luis Rey River. Construction activities within or near these native habitat types have potential to directly or indirectly impact eleven species of special status plants and animals, including some listed as threatened or endangered under state and federal endangered species acts. Construction of the project would also result in temporary and permanent loses of 9.3 acres of coastal sage scrub and 3.4 acres of non-native grassland, which contributes to the significant cumulative loss of these habitat types in the northern San Diego County region.

To compensate for these losses and to achieve consistency with the draft North County Multiple Species Conservation Program, the applicant must implement avoidance, minimization, and compensation measures described in staff's conditions of certification. The Conditions of Certification include the recommended terms from the California Department of Fish and Game (CDFG) for a Streambed Alteration Agreement and a Habitat Loss Permit from the County of San Diego Department of Public Works. The latter permit incorporates guidance from the CDFG and the U.S. Fish and Wildlife Service for avoiding take[1] of state and federal listed species. With implementation of staff's conditions of certification, construction and operation of the project would comply with all federal, state, and local laws, ordinances, regulations, and standards relating to biological resources. Staff recommends adoption of the proposed Biological Resources Conditions of Certification to mitigate potential impacts to sensitive biological resources to less than significant levels.

INTRODUCTION

This section provides the California Energy Commission (Energy Commission) staff's Staff Assessment of potential impacts to biological resources from the construction and operation of the OGP, a 96-megawatt (MW) electric generation peaking facility. This analysis discusses the biological resources of the project site, linear and off-site facilities, and addresses potential impacts of the OGP to state and federally listed species and critical biological resources. This assessment describes the need for mitigation, the adequacy of mitigation proposed by the applicant, and specifies additional mitigation measures to reduce identified impacts to less than significant levels. It also determines the compliance of the applicant, J-Power USA Development Co., LTD (J-Power), with applicable laws, ordinances, regulations, and standards (LORS) and recommends conditions of certification.

[1] "Take" is defined by the California Department of Fish and Game (Fish and Game Code §86) as: "To hunt, pursue, catch, capture or kill, or attempt to hunt, pursue, catch, capture, or kill."

This analysis is based, in part, upon information provided in the OGP Application for Certification (OGE 2008a), responses to staff data requests (TRC 2008f); staff workshops (OGE 2008g) and other supplemental information provided by the applicant (OGE 2008c); site visits by Energy Commission staff on September 24 and November 29, 2007; and communications with representatives from the California Department of Fish and Game (CDFG), the United States Fish and Wildlife Service (USFWS), and the San Diego County Public Works Department and Department of Land Use and Planning.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

Biological Resources Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

FEDERAL	
Clean Water Act (CWA) of 1977	Title 33, United States Code, Sections 1251-1376, and Code of Federal Regulations, Part 30, Section 330.5(a)(26), prohibit the discharge of dredged or fill material into the waters of the United States without a permit. The administering agency is the U.S. Army Corps of Engineers (USACE).
Endangered Species Act (ESA) of 1973	Title 16, United States Code, Section 1531 et seq., and Title 50, Code of Federal Regulations, Part 17.1 et seq., designate and provide for the protection of threatened and endangered plant and animal species and their critical habitat. The administering agency is the U.S. Fish and Wildlife Service (USFWS).
Migratory Bird Treaty Act	Title 16, United States Code, Sections 703 through 712, prohibit the taking of migratory birds, including nests with viable eggs. The administering agency is the USFWS.
Fish and Game Coordination Act	Title 16, United States Code, section 661 et seq. requires federal agencies to coordinate federal actions with the U.S. Fish and Wildlife Service (USFWS) to conserve fish and wildlife resources.
STATE	
California Endangered Species Act (CESA) of 1984	Fish and Game Code Sections 2050 through 2098 protect California's rare, threatened, and endangered species.
California Code of Regulations	California Code of Regulations Title 14, Division 1, Subdivision 3, Chapter 3, Sections 670.2 and 670.5, list plants and animals of California that are designated as rare, threatened, or endangered.
Fully Protected Species	Fish and Game Code Sections 3511, 4700, 5050, and 5515 prohibit the taking of animals that are classified as fully protected in California.

Nest or Eggs – Take, Possess, or Destroy	Fish and Game Code Section 3503 protects California's birds by making it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird.
Birds of Prey – Take, Possess, or Destroy	Fish and Game Code Section 3503.5 specifically protects California's birds of prey in the orders Falconiformes and Strigiformes by making it unlawful to take, possess, or destroy any such birds of prey or to take, possess, or destroy the nest or eggs of any such bird.
Migratory Birds – Take or Possession	Fish and Game Code Section 3513 protects California's migratory non-game birds by making it unlawful to take or possess any migratory non-game bird as designated in the Migratory Bird Treaty Act, or any part of such migratory non-game bird.
Natural Community Conservation Plan (NCCP) Act of 1991	This act includes provisions for protection and management of state-listed threatened or endangered plants and animals and their designated habitats.
Native Plant Protection Act of 1977	Fish and Game Code Sections 1900 et seq. designate rare, threatened, and endangered plants in the State of California.
Streambed Alteration Agreement	Fish and Game Code section 1600 et seq. requires the CDFG to review project impacts to waterways, including impacts to vegetation and wildlife from sediment, diversions, and other disturbances.
Clean Water Act	By federal law, every applicant for a federal permit or license for an activity which may result in a discharge into a California water body, including wetlands, must request a 401 certification from the Regional Water Quality Control Board so that the proposed activity will not violate state and federal water quality standards.
LOCAL	
San Diego County General Plan – Open Space Element; Conservation Element and Community and Subregional Plans	Provides guiding principles for the conservation of biological resources, such as water, vegetation, and wildlife habitat.
Multiple Species Conservation Plan San Diego County Code Title 8, Div. 6, Ch 5: Biological Mitigation Ordinance Sec. 86.501	These ordinances protect the County's biological resources by guiding development outside of biological resource core areas, and by establishing mitigation standards for discretionary projects. Adoption and implementation of these ordinances enable the County of San Diego to achieve the conservation goals set forth in the Subarea Plan for the Multiple Species Conservation Plan ("MSCP"), adopted by the Board of Supervisors on October 22, 1997.

NCCP Conservation and Process Guidelines	Documents comprising the NCCP Conservation and Process Guidelines include the Southern California Coastal Sage Scrub Natural Community Conservation Planning Conservation Guidelines and the Southern California Coastal Sage Scrub Natural Community Conservation Planning Process Guidelines, both dated November 1993, on file with the Clerk of the Board of Supervisors as Document No. 758984. These documents comprise the State's NCCP Conservation and Process Guidelines by the special rule promulgated by the U.S. Fish and Wildlife Service for the coastal California Gnatcatcher under Section 4(d) of the Endangered Species Act of 1973, published at Section 17.41(b) of Part 17, subchapter B of chapter I, Title 50 of the Code of Federal Regulations.
Habitat Loss Permit	This permit is issued by the Director of the San Diego Planning and Land Use or the Director of the San Diego Department of Public Works in connection with the issuance of a permit or approval authorizing the disturbance or removal of coastal sage scrub. Habitat Loss Permit Ordinance No. 9698 amends Section 86.101 San Diego County Code to authorize the Director of the Department of Public Works to issue Habitat Loss Permits in connection with the review of grading and improvement plans.

SETTING

REGIONAL DESCRIPTION

The OGP would be located in north San Diego County, approximately 3.5 miles northeast of Interstate 15 on State Route (SR) 76, and approximately two miles west of the community of Pala. The project area is east of Monserate Mountain, north of the San Luis Rey River, and west of the community of Pala and the Pala Indian Reservation. The region is primarily rural, consisting of agricultural lands and low-density residential, but also includes large-scale commercial or industrial development such as the Pala Casino and Spa Resort and former aggregate mining operations on the San Luis Rey River.

Some of the most significant native plant communities in the region include Diegan coastal sage scrub, southern riparian forest along the San Luis Rey River, chaparral, and coast live-oak woodlands. While much of the native vegetation in the region has been eliminated and disturbed, extensive tracts of habitat remain and support a diverse array of plants and wildlife communities, including many threatened and endangered species. The following sections describe the predominant vegetation communities and wildlife in the region, discuss the plant and wildlife communities occurring at the project site and its ancillary facilities, and summarize the status and distribution of special status plant and animal species potentially affected by the OGP.

PLANT AND WILDLIFE COMMUNITIES

The plant and wildlife communities occurring within the project area are described below. The project area encompasses the proposed OGP power plant site, a 250-foot radius bordering the site, and the proposed natural gas pipeline alignment extending from Pala Del Norte Road in a southwest direction to Rice Canyon Road. The project area also includes the proposed water truck loading sites located adjacent to Rice Canyon Road approximately one mile north of the SR-76 intersection.

The project area plant communities include abandoned orchards (proposed facilities location), disturbed/developed (existing Pala Substation, and former dairy farm facilities), coast live oak woodlands, Diegan coastal sage scrub, non-native grassland, southern mixed chaparral, ruderal and agricultural lands. The project area also extends into the vegetated portion of the San Luis Rey River flood prone area at two locations that are dominated southern riparian forest and southern cottonwood willow riparian forest. The plant communities and characteristic wildlife of the project area are described in more detail below.

Diegan Coastal Sage Scrub

Diegan coastal sage scrub occurs on the proposed OGE site and along the gas pipeline alignment. This shrub and sub-shrub community typically occurs on gentle to moderate slopes and is often dominated by coastal sagebrush (*Artemisia californica*) with co-dominants of California buckwheat (*Eriogonum fasciculatum* var. *fasciculatum*), California broom (*Lotus scoparius*), black sage (*Salvia mellifera*), white sage (*Salvia apiana*), and laurel sumac (*Malosma laurina*).

Wildlife typically found in Diegan coastal sage scrub habitat includes small mammals such as white-footed deer mouse (*Peromyscus maniculatus*), wood rats (*Neotoma* sp.), and Audubon cottontail (*Sylvilagus audubonii*), which attract predators such as coyotes (*Canis latrans*), red-tailed hawks (*Buteo jamaicensis*), and northern harriers (*Circus cyaneus*). Coastal sage scrub provides cover, foraging and breeding habitat for many bird species, including these observed during the 2007/2008 surveys within the project area: Anna's hummingbird (*Calypte anna*), blue-gray and coastal California gnatcatcher (*Polioptila caerulea* and *P. californica californica*), Bewick's wren (*Thyromanes bewickii*), southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*), wrentit (*Chamaea fasciata henshawi*), Say's phoebe (*Sayornis saya*), California and spotted towhee (*Pipilo crissalis* and *P. maculatus*) and white-crowned sparrow (*Zonotrichia leucophrys*). Reptiles found in Diegan coastal sage scrub within the OGP project area during the 2007/2008 surveys include northern red diamond rattlesnake (*Crotalus ruber ruber*), coast horned lizard (*Phrynosoma coronatum*), and side-blotched lizard (*Uta stansburiana*).

Diegan coastal sage scrub supports a number of threatened, endangered, and special status plant and wildlife species, some of which are known to occur in or near the project area.

Coast Live Oak Woodland

Open coast live oak woodland is located east of the power plant site, at scattered locations north of SR 76, and on a hillside at the intersection of SR 76 and Rice Canyon

Road. Coast live oak woodland in the project area is dominated by coast live oaks (*Quercus agrifolia* var. *agrifolia*). Other species recorded in this vegetation community include laurel sumac, sugar bush (*Rhus ovata*), blue elderberry (*Sambucus mexicanus*), southern honeysuckle (*Lonicera subspicata* var. *denudata*), poison oak (*Toxicodendron diversilobum*), and Russian thistle (*Salsola tragus*). Wildlife observed typically in coast live oak woodlands such as those in and near the project area include acorn woodpecker (*Melanerpes formicivorus*), western scrub jay (*Aphelocoma californica obscura*), and western fence lizard (*Sceloporus occidentalis*).

Southern Mixed Chaparral

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

Non-native Grassland

The non-native grassland occurs primarily south of the site where construction staging and secondary access would occur. This habitat is comprised of non-native grasses and herbaceous broadleaf species including foxtail chess (*Bromus madritensis* ssp. *rubens*), short-pod mustard (*Hirschfeldia incana*), filaree (*Erodium cicutarium*), tocalote (*Centaurea melitensis*), and wild oats (*Avena barbata*). This vegetation community is disturbed and dominated by non-native species, but nevertheless provides foraging and nesting habitat for a variety of wildlife.

Riparian Forest

Riparian forest occurs within the project area along the San Luis Rey River. Much of the river channel/floodplain is characterized by southern riparian forest habitat, a dense bottomland plant community dominated by willow species such as arroyo and black willow (*Salix lasiolepis* and *S. gooddingii*). In addition to the southern riparian forest, high quality southern cottonwood willow riparian forest occurs south of the project site and near the gas pipeline alignment south of SR 76. Dominant plant species in this area include western cottonwood (*Populus fremontii*), California sycamore (*Plantanus racemosa*), arroyo and black willow, mulefat (*Baccharis salicifolia*), mugwort (*Artemisia douglasiana*), ragweed (*Ambrosia* sp.), cattails (*Typha* sp.), and poison oak.

The riparian habitat of the San Luis Rey River supports a high density and diversity of wildlife including bird species such as least Bell's vireo (*Vireo bellii pusillus*), southwestern willow flycatcher (*Empidonax traillii extimus*), western wood pewee (*Contopus sordidulus*), ash-throated flycatcher (*Myiarchus cinerascens*), yellow warbler (*Dendroica petechia*), yellow-breasted chat (*Icteria virens*), oak titmouse (*Baeolophus inornatus*), song sparrow (*Melospiza melodia*), violet-green swallow (*Tachycineata thalassina*), house wren (*Troglodytes aedon*), and Cooper's hawk (*Accipiter cooperii*). Amphibians and reptiles inhabiting these habitat types include the arroyo toad (*Bufo californicus*), western spadefoot (*Scaphiophus hammondi*), western toad (*Bufo boreas*), two-striped garter snake (*Thamnophis hammondi*), and San Diego ringneck snake

(*Diadophis punctatus similes*). Mammals inhabiting these areas include such species as the brush rabbit (*Sylvilagus bachmani*), Virginia opossum (*Didelphis virginiana*), raccoon (*Procyon lotor*), coyote (*Canis latrans*), and bobcat (*Felis rufis*).

Like the coastal sage scrub plant community, riparian habitat along the San Luis Rey River supports many threatened, endangered, and other special-status species.

San Luis Rey River and Other Waterways

The San Luis Rey River runs south of SR 76 in the Project Area, and in the vicinity of the Project Area was diverted southward by mining operations and is now confined to a diked channel located approximately 0.5 mile south of SR 76 . Flow in the San Luis Rey River is intermittent, and the closest perennial surface waters to the site are ponds that occur in the riverbed where past mining has exposed the water table in the alluvial aquifer.

Based on the presence of riparian vegetation, proximity, and topographic setting, this riparian area appears to have been part of the San Luis Rey River bank, but is now separated from the river channel by a prism of fill on which the unpaved road between the two former dairy farm areas is constructed. Dominant vegetation consists of California sycamore (*Platanus racemosa*) and Fremont's cottonwood (*Populus fremontii*). Because this area appears to have at one time been associated with the San Luis Rey River bank and still supports riparian vegetation near the river, it is considered potential jurisdictional "waters of the State."

In addition to the San Luis Rey River, six ephemeral drainages and their tributaries occur within the project area which are considered waters of the United States and waters of the State. The six ephemeral drainages do not support riparian or wetland vegetation. All eventually cross under SR 76 and flow to the San Luis Rey River.

SITE DESCRIPTIONS

Power Plant Site

The 8.5-acre site consists mostly of an abandoned lemon orchard on a very old alluvial fan surface that slopes southward to the San Luis Rey River. The northwestern portion of the site was used for orchard debris disposal and supports disturbed Diegan coastal sage scrub. The San Diego Gas & Electric (SDG&E) Pala Substation is located approximately 700 feet southwest of the site, and Pala del Norte Road, a paved private road, generally parallels the western boundary of the site. Ponds from an old aggregate mine and riparian vegetation occurs in the San Luis Rey River just south of SR 76.

Habitat adjacent to the northern and western boundaries of the site consists of coastal sage scrub. Ephemeral drainages that run in a generally north to south direction are located to the west and east of the site. Both of these drainages have been extensively disturbed by orchard land clearing and debris disposal, but are considered waters of the United States and waters of the State. The western drainage is lined with scattered remnants of coastal sage scrub vegetation while the eastern drainage is lined with open coast live oak woodland. An abandoned avocado grove is located east of the eastern drainage. One of three proposed construction laydown areas is located immediately

south of the site between the southern boundary and SR 76 to the south. It is part of the same orchard on which the site would be located and supports non-native grasses and ruderal species.

Linear Facilities

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

An approximately 2.4-mile natural gas pipeline lateral (gas pipeline) would connect the site to an existing SDG&E 16-inch gas main that passes approximately 1.3 air miles west of the site. Segment A is approximately 0.4 mile-long segment of the gas pipeline and begins at the site boundary and ends at the southeast corner of the Pala Substation. Segment A would be located entirely within developed areas (i.e., roads and road shoulder) except for a short segment of Diegan coastal sage scrub that would be temporarily disturbed for construction.

Segment B, approximately 0.6 mile-long segment begins at the existing unpaved graded pad at the southeast corner of the Pala Substation and traverses generally steep upland terrain comprised of Diegan coastal sage scrub. This segment ends just south of SR 76 approximately 0.4 air miles southwest of the Pala Substation in a former dairy farm. This segment follows existing unpaved roads throughout the upland terrain, except for the easternmost approximately 400 feet where the route crosses Diegan coastal sage scrub.

Segment C begins generally parallels SR 76 and is approximately 1.0 mile-long segment, which follows existing unpaved roads through the two former dairy farms. While the route of the gas pipeline segment is the existing 12 to 15-foot unpaved road, approximately 700 feet of this segment is along roadway that surrounded by southern riparian forest associated with the San Luis Rey River. The west end of Segment C occurs at a second crossing of SR 76, where the pipeline will cross back over to the north side of the road. Outside of the riparian forest area, Segment C traverses terrain that is exclusively urban/developed and agriculture with no natural habitat on or adjacent to the pipeline route. The portion of Segment C that is within 300 feet of riparian forest would be directionally drilled rather than trenched to avoid potential impacts to sensitive species and habitats.

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

The two staging/laydown areas for construction of the pipeline are located south of SR 76 on developed land previously occupied by dairy operations. The northern staging area is bordered by disturbed lands except at to the northwest, where a small patch of southern cactus shrub occurs. The southern staging area is surrounded by disturbed lands, but is immediately west of a high quality stand of southern cottonwood willow riparian forest bordering the San Luis Rey River.

Water Pickup Stations

Water for the project would be supplied by Fallbrook Public Utilities District (FPUD) from two offsite pickup locations that would be constructed, owned, and operated by FPUD. The fresh water pickup station is approximately 5.1 air miles west of the site and is on disturbed land. The area proposed for the water pickup construction is regularly disked, so vegetation within the proposed project site is minimal and consists of weedy, non-native species. A poorly defined drainage is located outside and approximately 200 feet south of the proposed project site, and is vegetated with non-native species. The proposed project site is bordered by a commercial plant nursery to the east.

The reclaimed water pickup station would be located within an existing FPUD water reclamation plant facility on disturbed lands approximately 8.5 air miles from the site. The proposed site itself is located on disturbed, ruderal lands, and is surrounded by non-native grassland.

Access Roads/Landscaping/Fuel Modification Zone[2]

Access to the site for operations activities will be via a newly constructed driveway from Pala Del Norte Road. The bridge would be designed so that required grading and bridge footings for the access road are outside the limits of federal and state jurisdictional waters. A second driveway would be constructed from SR 76 at the south side of the site. The second driveway would be used for access during construction but would not normally be used during operations. The second driveway would be constructed with a concrete apron adjacent to SR 76 and then have crushed rock road surfacing into the plant.

An 8-foot-tall metal fabric security fence with barbed wire or razor wire on top would enclose the site. Areas inside the plant security fencing that are not occupied by structures or paved roads would be surfaced with crushed rock. Outside the security fence, surfaces disturbed by construction would be landscaped in accordance with the County zoning ordinance and the final approved Fire Protection Plan. Only native species would be used for landscaping. The final approved Fire Protection Plan is expected to include requirements for fuel modification within 125 feet of equipment and structures and within 50 feet of site access roads. The landscaping plan and fuel modification zones are subject to review and approval by the Fire Marshal. Plants that are prohibited by the Fire Protection Plan will not be used within the fuel modification zones.

[2] A fuel modification zone is a strip of land adjacent to structures or roads where combustible vegetation has been removed.

Transmission System Upgrades

Transmission system upgrades will be required beyond the Pala Substation, including reconductoring, changing relay settings, and other work. Transmission system upgrades will be performed by SDG&E and will be finalized in conjunction with the interconnecting agreement. The reconductoring will take place entirely within the existing SDG&E transmission line right-of-way between the Monserate and Pala Substations, a distance of approximately seven miles. Reconductoring work consists of preparing existing transmission line poles to receive new conductors, which will involve replacing 33 of the 117 existing poles, installing nine new poles, and removing two existing poles. A preliminary analysis of potential biological impacts of the reconductoring is discussed below, based on preliminary site design (TRC 2008g). When final design is complete, a final assessment of impacts to biological resources would be made and mitigation measures developed as part of the overall transmission system upgrade design work completed by SDG&E.

SPECIAL STATUS SPECIES

The following tables identify the sensitive species that have been seen or have the potential to occur in the project vicinity.

Biological Resources Table 2
Special Status Plants Potentially Occurring in the Project Area

Common Name	*Scientific Name*	Status** (Federal, State, CNPS, San Diego)
Brewers' calandrinia	*Calandrinia breweri*	--/--/CNPS 4.2/D/--
California screw-moss	*Tortula californica*	--/--/CNPS 1B.2/--
Chaparral nolina	*Nolina cismontane*	--/--/CNPS 1B.2/MSCP-A
Chaparral sand-verbena	*Abronia villosa var. aurita*	--/--/CNPS 4.2/ MSCP-A
Cooper's rein orchid	*Piperia cooperi*	--/--/CNPS 4.2/ MSCP-D
Englemann oak*	***Quercus engelmannii***	**--/--/CNPS 4.2/ MSCP-D**
Felt-leaved monardella	*Monardella hypoleucca* ssp. *Lanata*	--/--/CNPS 1B.3/ MSCP-A
Gander's ragwort	*Packera [Senecio] ganderi*	--/--/CNPS 4/2/ MSCP-A
Graceful tarplant	*Holcarpha virgata elongate*	--/--/CNPS 4/2/ MSCP-D
Hall's monardella	*Monardella macrantha ssp. Hallii*	--/--/CNPS 1B.3/ MSCP-A
Jaeger's mile-vetch	*Astragalus pachypus var. jaegeri*	--/--/CNPS 1B.1/ MSCP-A
Lakeside ceanothus	*Ceanothus cyaneus*	--/--/CNPS 1B.2/ MSCP-A-NE
Lewis sun cup	*Camissonia lewisii*	--/--/CNPS 1B.1 MSCP-A
Mesa horkelia	*Horkelia cuneata* ssp. *puberula*	--/--/CNPS 1B.1/ MSCP-A-NE
Nevin's barberry	*Berberis nevinii*	FE/SE/CNPS 1B.1/ MSCP-A-NE
Orcutt's brodiaea	*Brodiaea orcutti*	--/--/CNPS 1B.1/ MSCP-A
Parry's tetracoccus	***Tetracoccus dioicus***	**--/--/CNPS 1B.3, MSCP-A**
Rainbow manzanita	*Arctostaphylos rainbowensis*	--/--/CNPS 1B.1/ MSCP- A
Ramona horkelia	*Horkelia truncate*	--/--/CNPS 1B.3/ MSCP-A
Robinson's peppergrass	*Lepidium virginicum* var. *robinsonii*	--/--/CNPS 1B.2, A
San Diego adolphia	*Adophia californica*	--/--/CNPS 2.1/B
San Diego ambrosia	*Ambrosia pumila*	FE/__/CNPS 1B.1/A-NE
San Diego sunflower	*Hulsea californica*	--/--/CNPS 1B3/A
San Diego thornmint	*Acanthomintha ilicifolia*	FT/SE/CPNS 1B.1/A-NE
San Miguel savory	*Satureja chandleri*	--/--/CNPS 1B.2/A
Slender-horned spineflower	*Dodecahema leptoceras*	FE/SE/CHPS 1B.1/--
Small flowered microseris	*Microseris douglasii var. platycarha*	--/--/CNPS 4.2/D
Southwestern spiny rush	*Jucus acutus ssp. Leopoldii*	--/--/CNPS 4/2/D
Spreading navarretia	*Navarretia fossalis*	FT/--/CNPS 1B.1/A
Sticky dudleya	*Dudleya viscida*	--/--/CNPS 1B.2/A
Summer holly	*Comarostaphylis diversifolia* ssp. *Diversifolia*	--/--/CNPS 1B.2/A
Palmer's goldenbush	*Ericameria palmeri* ssp. *Palmeri*	--/--/CNPS 2.2, B-NE
Thread-leaved brodiaea	*Brodiaea filifolia*	FT/SE/CNPS 1B.1/A
Vail Lake ceanothus	*Ceanothus ophiochilus*	FT/SE/CNPS 1B.1/--
Western dichondra	*Dichondra occidentalis*	--/--/CNPS 4.2/D

* See **Status Legend** following Biological Resource Table 3 to translate the status codes.
* **Bolded** species names are those observed on or near the proposed project site or linear facilities during the 2007/08 field surveys.

Biological Resources Table 3
Special Status Wildlife Potentially Occurring in the Project Area

Common Name	Scientific Name	Status (Federal, State, MSCP)
Fish		
Arroyo chub	*Gila orcuttii*	CSC/MSCP 1
Invertebrates		
Quino checkerspot butterfly	*Euphydryas editha quino*	FE, MSCP 1
Hermes copper	*Lycaena hermes*	MSCP 1
Monarch butterfly	*Danaus plexippus*	MSCP 2
Amphibians		
Arroyo toad	*Bufo californicus*	FE, CSC, MSCP-1
California red-legged frog	*Rana aurora draytoni*	FT, CSC, MSCP-1
Western spadefoot	*Spea hammondii*	CSC, MSCP-2
Reptiles		
Coast (San Diego) horned lizard	*Phrynosoma coronatum*	CSC, MSCP-2
Coast patch-nosed snake	*Salvadora hexalepis virgultea*	CSC,
Coastal western whiptail	*Aspidoscelis tigris stejnegeri*	MSCP-2
Coastal rosy boa	*Charina trivirgata roseofusca*	MSCP-2
Coronado skink	*Eumeces skiltonianus interparietalis*	CSC, MSCP-2
Northern red-diamond rattlesnake	*Crotalus ruber ruber*	CSC, MSCP-2
Orange-throated whiptail	*Aspidoscelis hyperythra*	CSC, MSCP-2
San Diego banded gecko	*Coeonyx variegates abbottii*	MSCP-1
San Diego ringneck snake	*Diadophis punctatus similis*	MSCP-2
Silvery legless lizard	*Anniella pulchra pulchra*	CSC, MSCP-2
South coast garter snake	*Thamnophis sirtalis novum*	CSC, MSCP-2
Southwestern pond turtle	*Actinemys marmorata pallida*	CSC, MSCP-2
Two-striped garter snake	*Thamnophis hammondii*	CSC, MSCP-1
Birds		
Bell's sage sparrow	*Amphispiza belli belli*	BCC, SCS, MSCP-1
Burrowing owl	*Oteo cunicularia*	CSC, MSCP-1
California gull	*Larus californicus*	CSC, MSCP-2
California horned lark	*Eremophila alpestris actia*	CSC, MSCP-2
Coastal cactus wren	*Campylorhynchus brunneicapillus sandiegensis*	BCC, CSC, MSCP
Coastal California gnatcatcher	*Polioptila californica californica*	FT, CSC, MSCP-1
Common barn-owl	*Tyto alba*	MSCP-1
Cooper's hawk	*Accipiter cooperii*	CSC, MSCP-1
Double-crested cormorant	*Phalacrocorax auritus*	CSC
Least Bell's vireo	*Vireo bellii pusillus*	FE, CE, MSCP-1
Northern harrier	*Circus cyaneus*	CSC, MSCP-1
Osprey	*Pandion haliaetus*	CSC
Southern California rufous-crowned sparrow	*Aimophila ruficeps canescens*	CSC,MSCP-1
Southwestern willow flycatcher	*Empidonax traillii extimus*	FE, CE, MSCP-1
White-tailed kite	*Elanus leucurus*	CFP, MSCP-1
Yellow-breasted chat	*Icteria virens*	CSC, MSCP-1
Yellow warbler	*Dendroica petechia brewsteri*	CSC, MSCP-2

Common Name	Scientific Name	Status (Federal, State, MSCP)
Mammals		
American badger	*Taxidea taxus*	CSC, MSCP-2
Big free-tailed bat	*Nyctinomops macrotis*	CSC, MSCP-2
Mexican long-tongued bat	*Choeronycteris mexicana*	CSC, MSCP-2
Pallid bat	*Antrozous pallidus*	CSC, MSCP-2
San Diego blacktailed jackrabbit	*Lepus californicus bennettii*	CSC, MSCP-2
San Diego desert woodrat	*Neotoma lepida intermedia*	CSC, MSCP-2
Western mastiff bat	*Eumops perotis californicus*	CSC, MSCP-2

***Status Codes:**

Federal: FE - Federally listed endangered: species in danger of extinction throughout a significant portion of its range
FT - Federally listed, threatened: species likely to become endangered within the foreseeable future

State SE - State listed, endangered
ST = state listed as threatened
SR - State listed, rare

California Native Plant Society (source: CNPS 2007**)**
List 1B - Rare, threatened, or endangered in California and elsewhere
List 2 - Rare, threatened, or endangered in California but more common elsewhere
List 3 - Plants which need more information
List 4 - Limited distribution – a watch list
0.1 - Seriously threatened in California (high degree/immediacy of threat)
0.2 - Fairly threatened in California (moderate degree/immediacy of threat)
0.3 - Not very threatened in California (low degree/immediacy of threats or no current threats known)

County of San Diego Multiple Species Conservation Plan
List A - Plants rare, threatened or endangered in California and elsewhere
List B - Plants rare, threatened, or endangered in California but more common elsewhere
List C - Plants which may be quite rare, but need more information to determine true rarity status
List D - Plants of limited distribution, uncommon, but need more information to determine true rarity status
NE – Listed in the Multiple Species Conservation Program as a narrow endemic, a species confined to a specific geographic region, soil type, and/or habitat;

Group 1 - Species has a very high level of sensitivity, either because it is listed as threatened or endangered or it has very specific natural history requirements.
Group 2 - Species becoming less common, but not so rare that extirpation or extinction is imminent. Species tend to be prolific within suitable habitat types.

To determine the status of special-status species in the project area, rare plant surveys were conducted at the appropriate time of year to establish presence/absence of rare plant species, and protocol-level surveys for threatened or endangered wildlife (least Bell's vireo, southwestern willow flycatcher, coastal California gnatcatcher, arroyo toad, Quino checkerspot butterfly, and Stephen's kangaroo rat) were also conducted in 2007/2008 (OGE 2008a). Based on these survey results, nine endangered, threatened, or special-status species were confirmed present at or near the site. An additional two special-status species could not be ruled out because suitable habitat is available and surveys could not conclusively demonstrate their absence. All nine species are discussed below.

Engelmann Oak

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

Parry's Tetracoccus

Parry's tetracoccus is a native evergreen shrub in the spurge family that blooms between April and May, and can reach heights of six feet or greater. It occurs in chaparral and coastal sage scrub habitats at an elevation ranging from 165 to 1,000 m and is typically found in chaparral on gabbro and metavolcanic soils. Approximately 83 Parry's tetracoccus were observed during floristic and other surveys for the project, with 23 plants located within the site boundaries or proposed fuel reduction zone. Additional individuals occur north of the study area boundary. The numbers of individual plants are estimates because Parry's tetracoccus plants send up multiple stems from one root system and often grow close together in clumps.

San Diego Desert Woodrat

This subspecies occurs in coastal sage scrub, prefers moderate to dense canopies, and is abundant in areas of rocky outcrops, cliffs, and slopes. The California Natural Diversity Data Base (CDFG) document this subspecies within three miles of the project site, and a *Neotoma* sp. nest was observed at the base of an Engelmann oak located on the project site during field surveys conducted on June 20, 2007. Additional woodrat nests have been observed in coastal sage scrub habitat surrounding the site and within or near the project linear facilities. It could not be determined if the nests were created by the dusky-footed woodrat (*Neotoma fuscipes*), which is a non-special-status species that could occur in the area, or were created by the San Diego desert woodrat (*Neotoma lepida intermedia*). In the absence of survey data to confirm the species identity of the *Neotoma* on site, the rarer San Diego desert woodrat is considered by staff to be present in the project area.

Coastal California Gnatcatcher

Coastal California gnatcatcher is an obligate, permanent resident of coastal sage scrub below an elevation of 2,500 feet in southern California and Baja California. A pair of coastal California gnatcatchers were documented successfully nesting within 200 feet of the gas pipeline alignment west of the site during protocol surveys for the subspecies conducted in spring 2008. The pair was observed during all six surveys, and successfully fledged three young. By the last survey (May 2, 2008), the pair appeared to be constructing a second nest and all three juvenile birds were seen in the area with their parents. Coastal California gnatcatchers should be considered a potential breeding resident of all coastal sage scrub habitat in and near the project area.

Cooper's Hawk

Cooper's hawks are found year-round throughout most of the state, nesting in trees or high places that are typically found in open woodlands or in riparian areas. Cooper's hawks were observed flying over the site during surveys in 2008. Much of the Project Area provides foraging habitat for this species, and potential nesting habitat occurs in the San Luis Rey River south of the project area.

Least Bell's Vireo

Least Bell's vireos are restricted to riparian habitats found mostly in southern California lowlands. The subspecies is vulnerable to nest parasitism from the brown-headed cowbird (*Molothrus ater*). This subspecies have been documented as breeding

throughout the San Luis Rey River (CNDDB 2008). Eight protocol-level surveys conducted from April 14 to June 23, 2008 detected eight least Bell's vireos in the southern riparian cottonwood habitat south of the project site. These observations included seven adult vireos (three pairs and one single male) and one juvenile vireo (with one of the adult pairs). Two singing male least Bell's vireos were first heard and observed during the first survey, on April 14, along the dirt road south of SR 76 that will serve as the alignment for the gas pipeline. The survey data indicate that at least one pair and possibly more least Bell's vireos are nesting in riparian habitat immediately adjacent to the proposed gas pipeline route. All riparian habitat on the San Luis Rey River within the project area should be considered high quality least Bell's vireo breeding habitat.

Southern California Rufous-Crowned Sparrow

Southern California rufous-crowned sparrow can be common in sage scrub, burned chaparral, and along firebreaks in mature chaparral. They prefer open shrubby habitat on rocky, xeric (dry) slopes. CNNDB records document this subspecies within three miles of the site and it was observed in the coastal sage scrub adjacent to the site during the 2008 field surveys. The coastal sage scrub habitat along the gas pipeline alignment provides potential habitat for this subspecies.

Southwestern Willow Flycatcher

Southwestern willow flycatchers occur in cottonwood-willow riparian forest and have been recorded within two miles of the Project Area on the San Luis Rey River (CNDDB 2008). No southwestern willow flycatchers were observed on the site during protocol field surveys conducted in spring 2008, but all riparian habitat on the San Luis Rey River should be considered potential breeding habitat for this species.

San Diego Horned Lizard

San Diego horned lizard subspecies inhabits coastal sage scrub and chaparral, occurring on friable, rocky, or shallow sandy soils. CNDDB records document this subspecies approximately 3.5 miles from the site, and several individuals were observed during the 2008 surveys in coastal sage scrub within the project linear corridor west of the site. Chaparral and coastal sage scrub habitats within the project area should be considered suitable habitat for this subspecies.

Northern Red Diamond Rattlesnake

Northern red diamond rattlesnake occurs in southern California and Baja California from the coast to eastern mountain slopes in rocky areas and dense vegetation such as chaparral, woodland, grassland, and desert. CNDDB records of this subspecies have been documented approximately three miles from the project site. A northern red diamond rattlesnake was observed immediately west of the site during a field survey for cultural resources conducted on April 14, 2007. Therefore, coastal sage scrub and chaparral habitats within the project area are considered to support this subspecies.

Arroyo Toad

The arroyo toad frequents third order or larger washes, streams, and arroyos in semiarid parts of the southwest. Stream substrates used for breeding range from sands

to small cobble, with sandy banks supporting mule fat (*Baccharis salicifolia*), willows (*Salix* spp.), cottonwoods (*Populus* sp.), or sycamores (*Platanus racemosa*). The arroyo toad has been documented within the San Luis Rey River flood prone area throughout the reach located adjacent to and partially within the Project Area (USFWS 2007, CNDDB 2008).

Arroyo toad surveys conducted by Cadre Environmental (OGE 2008a Appendix 6.6-H, Results of Arroyo Toad Habitat Assessment for the Orange Grove Project, San Diego County) concluded that no suitable arroyo toad breeding habitat is present within the two portions of the San Luis Rey River southern cottonwood willow riparian forest (depicted as Area 1 and 2 on Attachment A, Appendix 6.6H, OGE 2008a) located within the Project Area. However, high quality arroyo toad foraging, movement, and aestivation habitat is present near one segment of the gas pipeline alignment in this forest. Drainages #5 and #6 (Rice Canyon Creek and Courser Creek) could also provide movement corridors for arroyo toads. The agricultural lands on either side of these drainages do not provide high quality upland aestivation habitat, but might infrequently utilize this area when foraging or searching for upland aestivation habitat.

ANALYSIS OF IMPACTS

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

The determination of whether a project has a significant effect on biological resources is based on the best scientific and factual data that staff could review for the project. The significance of the activity is in large part dependent on the setting and the existing LORS for the particular site. For example, disturbance during construction on a “brownfield” (i.e., developed) site may not be significant, but this same activity on a “greenfield” (i.e., undeveloped) site may be significant because of the greater likelihood of sensitive biological resources in the area. Generally, staff relies on the rules and regulations of USFWS, USACE, and CDFG in assessing significance. Those agencies have special expertise in addressing biological resources and staff finds that absent unusual circumstances, compliance with the requirements they have adopted or would adopt but for the Commission’s exclusive jurisdiction will be sufficient to avoid or mitigate significant adverse effects. Staff also considered the County of San Diego’s ordinances protecting biological resources and guidance contained within the North County Multiple Species Conservation Program in developing the impact analysis and mitigation measures discussed below.

Significant biological resource impacts would occur if special-status species, such as state- or federal-listed species, state fully protected species, candidates for state or federal listing and/or Species of Special Concern, are likely to be impacted from the construction or operation of the proposed project. Interruption of species migration, reduction of native fish, wildlife and plant habitat, causing a fish or wildlife population to drop below self-sustaining levels, and disturbance of wetlands, marshes, riparian areas or other wildlife habitat would also be considered significant impacts. Harassment of a protected species, even if it does not result in the loss of habitat or reduction in population numbers, would still be considered a significant impact. Substantial degradation of the quality of the environment or environmental effects that are

individually limited, but cumulatively considerable, would also be considered significant. Compliance with LORS is typically sufficient to avoid or mitigate these impacts.

DIRECT AND INDIRECT IMPACTS AND MITIGATION

The CEQA Guidelines define direct impacts as those impacts that result from the project and occur at the same time and place. Indirect impacts are caused by the project, but can occur later in time or farther removed in distance while still reasonably foreseeable and related to the project. The potential impacts discussed in this analysis are those most likely to be associated with construction and operation of the project.

Projects in developed sites typically have less of an impact on sensitive biological resources because they lack suitable habitat on site. However, such projects are evaluated for the impacts they could have on surrounding areas that remain in more natural conditions and support sensitive biological resources.

Direct Impacts to Plant Communities and Wildlife

Construction of the OGP will result in direct impacts to plant communities and wildlife from vegetation clearing, grading, and trenching within the site and along linear facilities. Biological Resources Table 4 summarizes the direct impacts to plant communities from each of the project features. Biological Resources Table 5 summarizes the potential impacts to special status species resulting from construction and operation of the OGP.

Biological Resources Table 4
Construction Impacts to OGP Plant Communities

	Impact Area (acres)							
Habitat	**Plant Site**	**Linear Facilities**	**Site Access**	**Laydown Areas**	**Fuel Modification Zone**	**Reclaimed Water Pickup**	**Fresh Water Pickup**	**Total**
Coastal Sage Scrub	0.3	7.5	0.1	0.0	1.4	0.0	0.0	**9.3**
Urban-developed	0.0	8.3	0.0	0.0	0.3	0.3	0.1	**9.0**
Disturbed	0.0	2.0	0.0	0.0	0.0	0.1	0.0	**2.1**
Riparian	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Annual Grassland	0.1	0.1	0.2	2.5	0.4	0.0	0.1	**3.4**
Riparian	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Agriculture	0.0	1.0	0.0	0.0	0.0	0.0	0.0	**1.0**
Orchard	7.9	0.0	0.7	2.5	0.1	0.0	0.0	**11.2**
TOTAL	**8.3**	**18.9**	**1.0**	**5.0**	**2.2**	**0.4**	**0.2**	**36.0**

Biological Resources Table 5
Special-Status Species - Summary of Impacts/Mitigation

Species	**Status**	**Impact/Mitigation**
Englemann oak *Quercus engelmannii*	CNPS 4.2 MSCP-D	**Impact:** Loss of one mature oak and several saplings. **Mitigation**: Incorporate Englemann oak in landscaping plan **(VIS-2)**.
Parry's tetracoccus *Tetracoccus dioicus*	CNPS 1B.3, MSCP-A	**Impact**: Loss of 23 Parry's tetracoccus plants. **Mitigation**: Implement Parry's tetracoccus mitigation plan **(BIO-11)**; fence/protect Parry's tetracoccus plants as Environmentally Sensitive Areas (ESAs) **(BIO-9).**
Arroyo toad Bufo californicus	FE, CSC, MSCP-1	**Direct**: Potential direct impacts from construction activities adjacent to riparian forest; water quality impacts to downstream breeding habitat in San Luis Rey River. **Mitigation**: Limited construction period (**BIO-7**); protect riparian habitat as an ESA (**BIO-9**); install toad exclusion fence in vicinity of riparian habitat (**BIO-12**); protect drainages and implement Best Management Practices (BMPs) & water quality protection measures (**BIO-6, 9**);
San Diego horned lizard *Phrynosoma coronatum blainvillii*	CSC, MSCP-2	**Direct**: Potential mortality due to grading, vegetation removal, trapping within trenches; loss of cover, foraging habitat from loss of coastal sage scrub. **Mitigation**: Acquire 18.6 acres of coastal sage scrub compensatory mitigation lands (**BIO-10**); implement BMPs, including checking open trenches (**BIO-6**); protect coastal sage scrub in ESA (**BIO-9**).
Northern red-diamond rattlesnake *Crotalus ruber ruber*	CSC, MSCP-2	**Direct**: Potential mortality due to grading, vegetation removal, trapping within trenches; loss of cover, foraging habitat from loss of coastal sage scrub. **Mitigation**: Acquire 18.6 acres of coastal sage scrub compensatory mitigation lands (**BIO-10**); implement BMPs, including checking open trenches (**BIO-6**); protect coastal sage scrub in ESA (**BIO-9**).
Coastal California gnatcatcher *Polioptila californica californica*	FT, CSC, MSCP-1	**Impact**: Potential loss of nest, eggs, or young; loss of coastal sage scrub breeding and foraging habitat; disturbance of nesting activities. **Mitigation**: Limited construction period (**BIO-7**); protect coastal sage scrub in ESA (**BIO-9**); acquire 18.6 acres of coastal sage scrub compensatory mitigation lands (**BIO-10**).
Cooper's hawk *Accipiter cooperii*	CSC, MSCP	**Impact**: Potential loss of nest, eggs, or young; loss of breeding and foraging habitat; disturbance of nesting activities. **Mitigation**: Limited construction period (**BIO-7**); conduct pre-construction nest surveys and implement avoidance measures (**BIO-8**).
Least Bell's vireo *Vireo bellii pusillus*	FE, CE, MSCP	**Impact**: Potential loss of nest, eggs, or young due to disturbance; disturbance of nesting activities, increased risk of cowbird parasitism. **Mitigation**: Limited construction period (**BIO-7**); protect riparian habitat as an ESA (**BIO-9**).
Southern California rufous-crowned sparrow *Aimophila ruficeps canescens*	CSC MSCP	**Impact**: Potential loss of nest, eggs, or young; loss of coastal sage scrub breeding and foraging habitat; disturbance of nesting activities **Mitigation**: Limited construction period (**BIO-7**); protect coastal sage scrub in ESA (**BIO-9**); acquire 18.6 acres of coastal sage scrub compensatory mitigation lands (**BIO-10**).
San Diego desert woodrat *Neotoma lepida intermedia*	CSC	**Direct**: Potential mortality due to grading, vegetation removal, trapping within trenches; loss of cover, foraging habitat from loss of coastal sage scrub. **Mitigation**: Acquire 18.6 acres of coastal sage scrub compensatory mitigation lands (**BIO-10**); protect coastal sage scrub in ESA (**BIO-9**).

Most of the direct impacts to native plant communities and sensitive species results from clearing and trenching associated with gas pipeline construction. Of the 9.3 acres of coastal sage scrub to be impacted by the OGP, 7.5 acres would be the result of disturbance from gas pipeline construction. The majority of this coastal sage scrub impact would result from construction on the steep hillside west of the existing SDG&E substation (Segment B). Because of the steep terrain, a maximum 40-foot wide swath within coastal sage scrub vegetation may be disturbed to create a safe, level construction surface for trenching and backfilling of the pipeline.

The impacts to coastal sage scrub habitat along the pipeline alignment will be temporary because disturbed soils within the work area will be seeded with an erosion control mix of native species, and allowed to revegetate naturally (Back 2008). No routine maintenance and removal of woody vegetation will occur along the gas pipeline (Back pers. comm.). Future repair work on the pipeline alignment involving soil disturbance and vegetation removal would require environmental review and permitting by the County of San Diego (Back 2008).

Fuel modification zones around the OGP site and access road will result in loss of 1.4 acres of coastal sage scrub. The applicant proposes a fuel modification zone of 125 feet around equipment and structures, and 50 feet along each side of the access road to the site (OGE 2008a). CDFG (2008) recommends that fuel reduction zones be reduced to 100 feet around structures and 30 feet along access roads, unless facilities or public safety would be clearly threatened. Staff concurs with CDFG's recommendation, which is described in more detail in staff's proposed Condition of Certification **BIO-9**.

The remaining 0.4 acres of coastal sage scrub loss results from construction of the site and its access road. Project construction will also result in impacts to 3.4 acres of non-native grassland, mostly from use of the laydown area on the site.

Temporary and permanent losses of 9.3 acres of coastal sage scrub and 3.4 acres of non-native grassland contribute to the significant cumulative loss of these habitat types in the northern San Diego County region. Unmitigated loss of these habitat types is inconsistent with the San Diego County Biological Mitigation Ordinances and the draft North County Multiple Species Conservation Program (NCMSCP). To compensate for these losses and to achieve consistency with San Diego County ordinances and the NCMSCP, the applicant must secure a Habitat Loss Permit from the County of San Diego Public Works Department. The Habitat Loss Permit includes acquisition of credits in a mitigation approved by the CDFG, the USFWS, and the San Diego Department of Public Works, as described in staff's proposed Condition of Certification **BIO-10**.

The applicant proposed to mitigate for impacts to Diegan coastal sage scrub at a 2:1 ratio, and non-native grassland at a 0.5:1 ratio, consistent with the Biological Mitigation Ordinance and the NCMSCP. The Red Mountain Mitigation Bank recently received preliminary approval from the CDFG and USFWS and will likely be selected as the mitigation bank for this project (TRC 2008j). However, this mitigation bank does not offer credits for non-native grassland habitat. The applicant has therefore proposed mitigating for non-native grassland with mafic southern mixed chaparral, and has requested approval for this out-of-kind mitigation from the USFWS and other resource agencies project (TRC 2008j). Staff concurs with the applicant's proposal to purchase

credits at the Red Mountain Mitigation Bank if it meets with the approval of CDFG, USFWS, and the County of San Diego. Other mitigation measures that must be implemented to avoid potentially significant impacts to Diegan coastal sage scrub are described in Conditions of Certification **BIO-7**, **8**, and **9**.

Construction of the OGP would result in the loss of 2.1 acres of disturbed habitat and 9.1 acres of urban/developed area. No special status species are likely to use this cover type for nesting, foraging, or cover, and the site provides only marginal value to common wildlife species. The loss of disturbed, urban areas associated with construction of the OGP is therefore considered less than significant, and no mitigation is required to offset this loss.

Birds nesting within and near the footprint of the site and the gas pipeline alignment could be directly impacted by construction activities because the six-month construction schedule is slated to begin in April 2009, the peak of the nesting season for many birds. Construction activities or vegetation removal could impact nesting activity, possibly resulting in the incidental loss of fertile eggs or nestlings, or could lead to nest abandonment. Loss in eggs or young of birds would violate the Migratory Bird Treaty Act, and in the case of listed species such as least Bell's vireo, coastal California gnatcatcher, and southwestern willow flycatcher, would be considered take. Implementation of Conditions of Certification **BIO-6, 7**, and **9** would help avoid impacts to nesting birds. If staff's proposed condition **BIO-6**, the limited operating period for construction within coastal sage scrub and riparian habitat, cannot be implemented, pre-construction surveys would be needed, as described in staff's proposed Condition of Certification **BIO–8.** These surveys need to be conducted in all areas subject to construction impacts, including disturbed sites, because landscaping trees and shrubs in orchards and ruderal areas could support nesting activities by disturbance-tolerant species such as western scrub jay and house finch (*Carpodacus mexicanus*).

In accordance with recommendations from CDFG (2008) and guidance in the North County Multiple Species Conservation Program, construction within 500 feet of riparian habitat should be avoided during the nesting season, March 15 through September 15 (**BIO-7**). To avoid impacts to coastal California gnatcatchers and other species nesting in coastal sage scrub habitat, construction activities with coastal sage scrub should be avoided from February 15 through August 31 (**BIO-7**). If construction activities cannot be avoided during these periods, pre-construction surveys nest surveys shall be conducted and avoidance measures implemented, as described in staff's Condition of Certification **BIO-8**.

Trenching and backfilling for installation of the natural gas pipeline and electric transmission line, vegetation clearing, and grading on the power plant site could cause mortality or injury to small mammals and reptiles inhabiting coastal sage scrub habitat, including special status species such as San Diego horned lizard, northern red diamond rattlesnake, and San Diego woodrat. Such direct impacts are expected to be minimal because these animals are mobile and are capable of escaping construction activities. However, small mammals and reptiles could fall into the construction trench and be unable to escape, making them vulnerable to temperature stress, desiccation, and predation. To reduce such potential impacts to less than significant levels, passive escape ramps shall be installed to allow wildlife species to exit when the trenches are

left open during the night. The Designated Biologist will check trenches daily to remove individuals that may enter the trench (**BIO-6**).

In addition to direct impacts from construction, the loss of cover, foraging and breeding habitat in coastal sage scrub contributes to the cumulative loss of these native plant communities. Implementation of Condition of Certification **BIO-10**, which calls for offsetting the impacts of coastal sage scrub impacts with compensatory off-site habitat acquisition, will reduce these potential impacts to less than significant levels.

An estimated 83 Parry's tetracoccus were observed within coastal sage scrub habitat during 2007/2008 floristic surveys; 23 of these will be impacted by grading within the site and by fuel reduction activities. An assessment of the regional impact of this loss was conducted by analyzing the 17 CNDDB occurrence records for this species within a 15 mile radius of the project site, excluding those detected in the OGP area (OGE 2008g). This analysis revealed at least 500 individual Parry's tetracoccus occur within this area, indicating that the loss of 23 individual plants will not likely jeopardize this species locally or regionally. However, this loss contributes to the regional cumulative loss of Parry's tetracoccus and other rare plants associated with coastal sage scrub habitat. To reduce this cumulative impact to less than significant levels, mitigation measures described in Condition of Certification **BIO-9** and **BIO-11** shall be implemented. These conditions involves implementation of an on-site revegetation plan to replace the Parry's tetracoccus lost during construction, and to protect individual plants near construction and fuel reduction activities from inadvertent impacts.

Operation of heavy equipment and surface-disturbing activities within the southern cottonwood willow riparian habitat of the San Luis Rey River could have direct impacts to wildlife even if all such activities are confined to disturbed areas such as unpaved roads and disturbed agricultural lands. In particular, arroyo toads could be directly impacted by construction activities within the segment of the gas pipeline near the southern cottonwood willow riparian habitat (Area #2 shown in Attachment A, Arroyo Toad Habitat Assessment, Appendix 6.6H – Results of Arroyo Toad Habitat Assessment for the Orange Grove Project, San Diego County, OGE 2008a). During the breeding season (March 1 through August 31), arroyo toads may utilize portions of the dirt road slated for gas pipeline construction for movement, foraging, and temporary burrowing. Potential significant impacts to arroyo toads can be avoided with implementation of Condition of Certification **BIO-12**, creation of a toad exclusion fence between the dirt road and the riparian habitat to the south, and with other measures described in Conditions of Certification **BIO-7** and **BIO-9**.

Future Impacts to Gregory Canyon Landfill Mitigation Lands

The westernmost portion of the Segment C of the gas pipeline passes through highly disturbed lands that were the site of the former Verboom Dairy. This abandoned dairy farm has been proposed for use as mitigation lands for impacts resulting from the Gregory Canyon Landfill project (San Diego County Department of Public Health 2007). The proposed habitat creation and enhancement areas comprise approximately 212.6 acres north of the San Luis Rey River, and would be suitable for development of coast live oak woodland, coastal sage scrub and/or riparian transitional habitat (San Diego County Department of Public Health 2007). The CDFG (2008) and the USFWS (Moreno 2008) expressed concern about the OGP gas pipeline impacting these future

mitigation lands. To address these concerns, the applicant has proposed mitigating for potential impacts to 2.2 acres of future mitigation lands at a 2:1 ratio, with acquisition of 4.4 acres of oak woodland credits in a suitable off-site mitigation bank (Back 2008). Staff concurs with this measure if it meets with the approval of CDFG and USFWS, and has included it in staff's proposed Condition of Certification **BIO-13**.

Transmission System Upgrades

The transmission line upgrades will involve reconductoring and other system upgrades of San Diego Gas & Electric Company's (SDG&E's) 69-kilovolt (kV) transmission line from the Monserate to Pala Substation. Impacts to biological resources from this upgrade work result from ground disturbance associated with pole replacements or improvements, and establishing laydown and stringing areas. A preliminary analysis of impacts (2008g, Attachment 11, Environmental Impact Analysis for the Reconductoring of SDG&E Transmission Lines 698B and 698E) indicates that a total of 5.53 acres will be disturbed as a result of the transmission system upgrades, including 0.12 acres of coastal sage scrub and 0.10 acres to non-native grassland. Work within or near coastal sage scrub could result in impacts to coastal California gnatcatcher and other species associated with this sensitive habitat type. Because some work will take place in the vicinity of drainages and riparian habitat, species such as least Bell's vireo and southwestern willow flycatcher could also be indirectly impacted by nearby construction. Avoidance, minimization, and compensation measures have been proposed to reduce impacts to biological resources to less than significant levels (2008g, Attachment 11). Those measures are not included in this analysis, but will be addressed as part of SDG&E's environmental review process for the transmission system upgrades.

Impacts to Waters of the US/Waters of the State/Riparian Habitat

The gas pipeline alignment crosses six drainages or their tributaries, but the crossings will be accomplished by boring beneath the drainages by means of horizontal directional drilling (OGE 2008a). With establishment of appropriate setbacks for the drilling described in Conditions of Certification **BIO-9** and **BIO-10**, horizontal directional drilling activities are not likely to directly affect state or federal jurisdictional waters. With implementation of Best Management Practices (BMPs), drilling and other surface-disturbing activities are not likely to result in increased sedimentation or other water quality impacts in these drainages. These requirements are discussed in more detail in staff's proposed Conditions of Certification **BIO-6** and **14** and Water and Soil Resources Conditions of Certification **SOIL & WATER-2, 3, 4,** and **5**.

Construction of a bridge over Drainage #1, the drainage west of the Site and east of Pala del Norte Road, is proposed to provide site access. Drainage #1 is a broad (approximately 38 feet) ephemeral drainage with three tributaries traversing coastal sage scrub and non-native grassland habitat. This drainage is jurisdictional waters of the State and of the United States, but does not support wetland or riparian vegetation. Direct impacts to jurisdictional waters and to water quality due to bridge construction at Drainage #1 can be avoided with implementation of staff's proposed Conditions of Certification **BIO-6** and **BIO-14**.

Construction activities during the breeding season near riparian habitat along the San Luis Rey River could have significant direct impacts to arroyo toad, least Bell's vireo,

and other sensitive riparian species. The applicant proposed avoiding these impacts by implementing a limited operation period within 300 feet of suitable riparian nesting habitat (OGE 2008s). Staff concurs with these measures, and has included this measure in Conditions of Certification **BIO-7**. These measures require avoidance of all construction activities within 300 feet of riparian habitat from March 1 through September 15 and protection of all riparian habitat. The limited construction window encompasses the breeding/active season for arroyo toads (March 1 through August 31) as well as least Bell's vireo and other bird species inhabiting riparian habitat (March 15 through September 15). As described in staff's proposed Condition of Certification **BIO-12**, a toad exclusion fence shall be installed at the southern border of this road to prevent direct impacts to arroyo toads from vehicular traffic and surface-disturbing activities.

To avoid inadvertent impacts to riparian vegetation, avoid direct construction impacts to arroyo toad, and to reduce the risk of water quality impacts, the applicant has also proposed horizontal directional drilling rather than trenching to install the gas pipeline in the unpaved road through riparian habitat (OGE 2008a). This is the road shown on Figure 3 of the AFC (OGE 2008a) that extends from "East Dairy Farm Area" to "West Dairy Farm Area". Staff concurs with this proposed construction method in this sensitive riparian habitat, and has incorporated this recommendation in staff's proposed Condition of Certification **BIO-7**.

Construction Effects on Water Quality and Aquatic Organisms

Construction activities will occur in close proximity to drainages within the proposed Project Area. All drainages slope to the south so that stormwater runoff from the project site eventually discharges directly to the floodplain of the San Luis Rey River. Construction activities will disturb approximately 36 acres, increasing potential for sedimentation and erosion to the adjacent San Luis Rey River. Increased sedimentation could adversely affect fish, amphibians, and other aquatic organisms in the San Luis Rey River, as could the accidental introduction of washwater, solvents, oil, chemical wastes, cement, or other pollutants from construction equipment and materials. Arroyo toads, a federally listed species, has been recorded breeding immediately downstream of the Project Area, and could be adversely affected by degradation of water quality in the San Luis Rey River.

The applicant has proposed avoiding and minimizing these potential impacts to water quality and aquatic organisms with implementation of an erosion and sedimentation plan (TRC 2008a). CDFG has also proposed Best Management Practices for water quality protection (CDFG 2008). Staff concurs with the applicant's and CDFG's recommendations to protect water quality in the San Luis Rey River, and has also included a construction setback from drainages for horizontal directional drilling activities. The Best Management Practices and other measures contained in staff's proposed conditions **BIO-6, 7, 9,** and **14** incorporate these recommendations, and their implementation will avoid impacts to water quality and aquatic biota.

Introduction of Predators/Nest Parasites

The presence of a construction crew, either by bringing dogs to the work site that could prey on wildlife or by bringing food items that might attract predators (coyotes, ravens,

raccoons), could indirectly affect sensitive species. Human food sources can also attract brown-headed cowbirds, nest parasites that can reduce nest success of least Bell's vireos, southwestern willow flycatchers, and other birds nesting the San Luis Rey River riparian habitat. Staff recommends implementation of the Best Management Practices described in Condition of Certification **BIO-6,** which includes guidelines for construction personnel to keep food-related trash in sealed containers and keep pets at home, to avoid these potential impacts.

Construction Impacts - Noise

Project construction is expected to begin in April 2009 and last for six months; construction activities will therefore overlap with the peak nesting season for birds breeding near the site and linear facilities. Construction noise can adversely affect nesting activities because birds communicate primarily through vocalizations and auditory cues, and therefore increased noise levels can interfere with normal communication. Background noise can interfere with maintenance of contact between mated birds, warning and distress calls that signify predators and other threats, and feeding behavior and protection of the young. In addition, high noise levels may discourage birds from nesting in areas that are otherwise suitable.

To prevent disturbance to nesting birds, no construction activities will occur between February 15 through August 31 within 500 feet of coastal sage scrub habitat, or between March 15 through September 15 within 300 feet of riparian habitat (Condition of Certification **BIO-7**). If such avoidance is not feasible, then pre-construction nest surveys will be conducted in all potential nesting habitat within 500 feet of the project area boundaries. If coastal California gnatcatchers are found nesting within 500 feet of proposed construction activities, or if least Bell's vireo or southwestern willow flycatchers are found nesting within 300 feet, such construction shall be postponed until a qualified biologist verifies that nesting is complete. Measures to protect special status species nesting in the OGP area are described in more detail in staff's proposed Conditions of Certification **BIO-7** and **8**.

OPERATIONS IMPACTS

Operational Noise

The OGE site is adjacent to SR 76, a busy roadway that generates ambient daytime noise. Noise from operation of the OGP will be more prominent at night. The Project design and implementation shall include noise reduction and noise control design features to the extent feasible ensure that operation of the Project will not exceed the effective noise standards of San Diego County code while accounting for ambient noise conditions from the adjacent SR 76. Noise increases due to the Project will be less than 5 dB at all of the surrounding areas with respect to the late-night residual noise; as described in the Noise section, project noise control design features (primarily sound walls) will reduce the plant noise additions to the very low ambient conditions such that

late-night standards can be met. Based on this analysis, staff has concluded that operational noise from the OGP will have no significant impacts to special status wildlife and other species in the vicinity of the site.

Criteria Pollutants and Toxic Air Pollutants

Operation of the OGP would result in emissions of criteria pollutants and toxic air pollutants, primarily particulate matter, carbon monoxide (CO), oxides of sulfur (SO_x), nitrogen oxides (NO_x), and precursor organic compounds (POC). Elevated levels of CO, SO_X, NO_X, and particulate matter have the potential to adversely impact biological resources. The periods during which wildlife and plant communities would be exposed to toxic air pollutant emissions from the OGP would be relatively limited because J Power expects to operate this facility primarily as a peaker unit (OGE 2008a). To minimize air pollutant emissions, the project would employ best-available control technology and would comply with air quality standards that are designed to protect human health, vegetation, and wildlife (OGE 2008a). An analysis of toxic air pollutants indicates that the facility impacts will not result in violations of existing air quality standards, nor cause an exacerbation of existing violations (OGE 2008a). Staff analyzed the potential for direct impacts of CO, SO_x, NO_x, and airborne particulates on vegetation and determined that the emission levels of these pollutants from the OGP are not likely to have significant impacts to special status plants, animals, or other biological resources in the San Luis Rey River or coastal sage scrub habitat.

Impacts of Lighting on Wildlife

Lighting at the OGP could adversely affect wildlife, including special status species in the San Luis Rey River, by disrupting normal foraging and nesting activities. Lights can also attract nocturnal migrants to tall structures such as exhaust stacks, putting them at risk of collision. To minimize the potential for adverse effects to wildlife resulting from lighting at the OGP, staff recommends the proposed Condition of Certification **VIS-3** be implemented. Suggested measures call for lighting to be restricted to areas required for safety, security, and operation; exterior lights will be hooded and directed on site. With implementation of this condition of certification, staff concludes that OGP lighting will have no significant impacts to nearby sensitive wildlife and their habitat.

Bird Collisions with OGP Structures

Bird fatalities due to collisions with man-made structures such as lighthouses, smokestacks, communication towers, windows, buildings, and power lines have been well-documented in the avian literature (Kerlinger 2000, Erickson et al. 2001). The two 80-foot-tall exhaust stacks to be constructed at the OGP site could potentially pose a collision risk to birds, including special status species inhabiting the surrounding coastal sage scrub habitat and the San Luis Rey River. The potential for collision with the exhaust stacks is considered less than significant, however, because site offers no topographic or habitat features that would draw nocturnal migrants or funnel them in a north-south direction through the project area.

Introduction of Non-Native Plant Species

When construction is complete at the OGP site, the perimeter will be planted with trees and shrubs as a visual screen in accordance with staff's proposed Condition of

Certification **VIS-2**. Inappropriate landscaping choices could harm plant communities if non-native, invasive species are included in the plant palette for the landscaping plan. In addition, runoff from irrigation of trees and shrubs with high water needs, or planting species that require intensive fertilizers or pesticides, could adversely affect water quality in the San Luis Rey River. To avoid these potential impacts, staff recommends that the landscaping plans do not include exotic, invasive plant species or those that require intensive irrigation or fertilizing. Staff supports this recommendation and provides additional information on CDFG's planting recommendations, including avoidance of exotic species in the landscaping plan, in staff's Condition of Certification **VIS-2**.

CUMULATIVE IMPACTS

Cumulative impacts refer to a proposed project's incremental effect viewed over time, together with other closely related past, present, and reasonably foreseeable future projects (Public Resources Code § 21083; California Code of Regulations, Title 14, §§ 15064[h], 15065[c], 15130, and 15355). Cumulative impacts can occur when individually minor but collectively significant projects take place over time.

Direct, indirect, and cumulative impacts to sensitive species and the loss of habitat are critical issues in the San Diego County region, an area supporting an extraordinarily high number of sensitive species. Consequently, state, federal, and local agencies have developed regional and subregional strategies to help minimize sensitive species impacts. Compliance with the North Area Multiple Species Conservation Program (NAMSCP) is the primary means of conserving San Diego County's sensitive biological resources and special status species and minimizing direct, indirect, and cumulative impacts of future development of both public and private lands within the NAMSCP area. Staff concludes that with implementation of mitigation measures and compliance with staff's conditions of certification, all of which are consistent with the NAMSCP, the OGP will not result in cumulative impacts to special status species or other sensitive biological resources.

COMPLIANCE WITH LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

The proposed project must comply with state, federal, and county laws, ordinances, regulations, and standards that address state and federally listed species, as well as other sensitive species, and their habitats. In San Diego County, the Multiple Species Conservation Program Subregional Plans provide guidance for protection of sensitive wildlife and plant communities within the San Diego region.

San Diego County has developed the draft North Area Multiple Species Conservation Program (MSCP) as a practical, science-based conservation approach to protect and contribute to the recovery of sensitive species within the northern Planning Area[3]. The MSCP addresses the high biological diversity in the county and its rapid urban growth.

[3] The Planning Area for the NCMSCP encompasses 311,890 acres in and around the unincorporated communities of Bonsall, De Luz, Fallbrook, Harmony Grove, Rancho Santa Fe, Lilac, Pala, Pauma Valley, Rainbow, Ramona, Rincon Springs, Twin Oaks Valley, and Valley Center.

This Plan serves as a multiple species Habitat Conservation Plan (HCP) pursuant to Section 10(a)(1)(B) of the federal Endangered Species Act (ESA), as well as a Natural Community Conservation Plan (NCCP) under the California NCCP Act.

The County of San Diego incorporates the habitat and sensitive species protection measures through their Habitat Loss Permit (HLP). An approved HLP is required before the San Diego County Department of Public Works can issue a grading permit if coastal sage scrub habitat will be impacted by the grading, pursuant to Section 86.104 of County of San Diego Ordinance No. 8365 (N.S.) and Section 4.2.g of the CSS NCCP Process Guidelines (CDFG, November 1993). A HLP application is currently under review by the San Diego Public Works Department. The draft findings of the HLP, which may be revised upon review by CDFG and USFWS, are as follows:

Finding 1.a: The habitat loss does not exceed the 5% guideline.

Approved coastal sage scrub losses for the entire unincorporated County, outside the boundaries of the Multiple Species Conservation Program (MSCP), will not exceed the 5% guidelines, as presented in the following table:

Unincorporated Areas – Coastal Sage Scrub Cumulative Loss

Total loss allowed under 5% guideline:	**2953.30 acres**
Cumulative loss of coastal sage scrub to date:	1359.92 acres
Net loss due to this project:	9.32 acres
Total cumulative loss:	1369.24 acres
Remaining loss under 5% guideline:	1584.06 acres

Finding 1.b: The habitat loss will not preclude connectivity between areas of high habitat values.

Extensive tracts of coastal sage scrub habitat rated as “very high” and “high” by the North County Subarea Plan Habitat Evaluation Model occur immediately north of the Orange Grove Energy project site and its linear facilities, and the project area is within the NCMSCP Pre-approved Mitigation Area. However, the 8.5-acre power plant site is located in an abandoned lemon orchard on a 41-acre parcel zoned General Agriculture. The 2.4 mile gas pipeline will be constructed on mostly disturbed lands zoned for General Agriculture, Limited Agriculture, and Solid Waste Facility. The proposed project and its linear facilities are immediately adjacent to SR 76, an existing barrier to wildlife movement and habitat connectivity. The habitat within the proposed project site and linear facilities are already highly disturbed by past agricultural operations, and are subject to ongoing disturbance by SR 76. The only intact and undisturbed coastal sage scrub habitat that will be directly affected by the project is an approximately 400-foot portion of the alignment immediately west of the Pala Substation. Upon completion of pipeline installation this disturbed area will be allowed to revegetate, and therefore will not create a substantial break in the continuity of coastal sage scrub vegetation. The proposed project, therefore, will not preclude connectivity between areas of high habitat value.

Finding 1.c: The habitat loss will not preclude or prevent the preparation of the subregional NCCP.

Construction of the Orange Grove Energy power plant and ancillary facilities would not preclude or prevent preparation of a subregional NCCP because the proposed impacts do not affect large populations of target resources and the development would not preclude connectivity, as described above. Avoidance, minimization, and compensatory mitigation measures described in the conditions of certification would avoid, minimize, or offset impacts to coastal sage scrub plant communities and the wildlife species dependent on this habitat.

Finding 1.d: The habitat loss has been minimized and mitigated to the maximum extent practicable in accordance with Section 4.3 of the NCCP Process Guidelines.

To minimize impacts to coastal sage scrub, the alignment of the gas pipeline was placed within disturbed areas as much as possible, mostly in existing unpaved roads or areas disturbed by agricultural operations. Placing the entire length of the gas pipeline within the SR 76 right-of-way would have avoided all impacts to coastal sage scrub habitat, but California Department of Transportation policy precludes a private entity such as Orange Grove J-Power from using state right-of-way (Markey 2008).

Avoidance and compensation measures described in the conditions of certification will offset the cumulative loss of coastal sage scrub, and will avoid direct and indirect impacts to special-status species inhabiting native habitats at the project site. The project-related loss of coastal sage scrub and impacts to special status species inhabiting this habitat type has therefore been minimized to the extent practicable.

Finding 2: The habitat loss will not appreciably reduce the likelihood of survival and recovery of listed species in the wild.

Four listed species (coastal California gnatcatcher, least Bell's vireo, southwestern willow flycatcher, and arroyo toad) have high potential to occur near the proposed gas pipeline alignment for the project (OGE 2008a). With implementation of staff's proposed conditions of certification, the project will not reduce the likelihood of survival and recovery of these listed species.

Finding 3: The habitat loss is incidental to otherwise lawful activities.

The project will require grading plans for development of the power plant site and ancillary facilities. Prior to clearing any coastal sage scrub or non-native grassland concurrence with findings from this Habitat Loss Permit will be required from the Department of Fish and Game and U.S. Fish and Wildlife Service, as well as approval by the County of San Diego for a Grading Permit. The project will also require a Streambed Alteration Agreement from the California Department of Fish and Game, and the project owner has already been notified that application is complete and will be issued by November 12, 2008 (notification of Lake or Streambed Alteration Agreement No. 1600-2008-0286-R5 Orange Grove Project [DFG 2008a]). No state or federal permits other than those noted above have been identified as being required. Construction and/or land use modification will not commence until all appropriate permits are secured. The project has been found to be in conformance with

Section 86.104 of the San Diego County Code. As such, the anticipated loss will be incidental to “otherwise lawful activities”.

In addition to integrating the County of San Diego’s HLP conditions into this analysis, staff has communicated with personnel from the CDFG and USFWS regarding recommended measures to protect sensitive biological resources and has incorporated those recommendations into conditions of certification. No Clean Water Act (CWA) section 404 permits are required from the U.S. Army Corps of Engineers (OGE 2008d), therefore, no CWA section 401 water quality certification will be required. In addition, the San Diego Regional Water Quality Control Board confirmed that Waste Discharge Requirements would not be required for drilling beneath drainages (CEC 2008q). The construction and operation of the project would therefore be in compliance with all federal, state, and local LORS related to biological resources if staff’s conditions of certification are adopted and implemented.

CONCLUSIONS

Construction of the OGP will result in temporary and permanent loses of 9.3 acres of coastal sage scrub and 3.4 acres of non-native grassland, which contributes to the significant cumulative loss of these habitat types in the northern San Diego region. Construction activities within or near coastal sage scrub habitat and riparian forest along the San Luis Rey River could directly or indirectly impact eleven species of special-status plants and animals, including some listed as threatened or endangered under state and federal endangered species acts. To compensate for these losses, avoid take of listed species, and to achieve consistency with the draft North County Multiple Species Conservation Program, the applicant must implement impact avoidance, minimization, and compensation measures described in staff’s conditions of certification. These conditions include specific measures to protect sensitive species and habitats, and general conditions to ensure implementation of a worker training program, presence of a qualified biologist to monitor construction, and development of a detailed mitigation and monitoring program (Conditions of Certification **BIO-1** through **BIO-5**).

Additional permits needed to address biological resource impacts of the project include a Streambed Alteration Agreement from CDFG, and a Habitat Loss Permit from the San Diego County of Public Works. No waters of the United States will be impacted; therefore no permits are needed from the U.S. Army Corps of Engineers. With implementation of staff’s conditions of certification, take of endangered and threatened species would be avoided, and the construction and operation of the project would comply with all federal, state, and local laws, ordinances, regulations, and standards relating to biological resources. Staff recommends adoption of the proposed biological resources conditions of certification to mitigate potential impacts to biological resources to less than significant levels.

CONDITIONS OF CERTIFICATION

The following Biological Resources conditions of certification are proposed by staff.

DESIGNATED BIOLOGIST SELECTION

BIO-1 The project owner shall submit the resume, including contact information, of the proposed Designated Biologist to the Compliance Project Manager (CPM) for approval. The Designated Biologist must meet the following minimum qualifications:

1. A Bachelor's degree in biological sciences, zoology, botany, ecology, or a closely related field;

2. At least three years of experience in field biology or current certification of a nationally recognized biological society, such as The Ecological Society of America or The Wildlife Society;

3. At least one year of field experience with biological resources found in or near the project area; and

4. An ability to demonstrate to the satisfaction of the CPM the appropriate education and experience for the biological resources tasks that must be addressed during project construction and operation.

Verification:

1. The project owner shall submit the specified information at least 60 days before the start of any site (or related facilities) mobilization. Site and related facility activities shall not begin until an approved designated biologist is available on site.

2. If the CPM considers the proposed Designated Biologist unacceptable, the project owner shall submit another individual's name and qualifications for consideration. If the approved Designated Biologist needs to be replaced, the project owner shall obtain approval of a new Designated Biologist by submitting to the CPM the name, qualifications, address, and telephone number of the proposed replacement. No disturbance will be allowed in any designated sensitive areas until the CPM approves a new Designated Biologist and the new biologist is on site.

DESIGNATED BIOLOGIST DUTIES

BIO-2 The CPM-approved Designated Biologist shall perform the following during project construction and operation:

1. Advise the project owner's Construction Manager on the implementation of the Biological Resource conditions of certification;

2. Supervise or conduct mitigation, monitoring, and other biological resources compliance efforts, particularly in areas requiring avoidance or containing sensitive biological resources, such as special status species nesting areas; and

3. Notify the project owner and the CPM of non-compliance with any Biological Resources condition of certification.

Verification: During project construction, the Designated Biologist shall maintain written records of the tasks described above, and summaries of these records shall be submitted along with the Monthly Compliance Reports to the CPM. During project operation, the Designated Biologist shall submit record summaries in the Annual Compliance Report.

DESIGNATED BIOLOGIST AUTHORITY

BIO-3 The project owner's Construction Manager shall act on the advice of the Designated Biologist to ensure conformance with all Biological Resources conditions of certification. The project owner's Construction Manager shall halt, if necessary, all construction activities in areas specifically identified by the Designated Biologist as sensitive to assure that potential significant biological resource impacts are avoided. The Designated Biologist shall:

1. Inform the project owner and the Construction Manager when to resume construction, and

2. Advise the project owner and the CPM if any corrective actions are needed or have been instituted.

Verification: Within two (2) working days of a Designated Biologist notification of non-compliance with a Biological Resources condition of certification or a halt of construction, the project owner shall notify the CPM by telephone of the circumstances and actions being taken to resolve the problem or the non-compliance with a condition. For any necessary corrective action taken by the project owner, a determination of success or failure will be made by the CPM within five (5) working days after receipt of notice that corrective action is completed, or the project owner will be notified by the CPM that coordination with other agencies will require additional time before a determination can be made.

WORKER ENVIRONMENTAL AWARENESS PROGRAM

BIO-4 The project owner shall develop and implement a CPM-approved Worker Environmental Awareness Program in which each of its employees, as well as employees of contractors and subcontractors who work on the project site or related facilities during construction and operation are informed about the sensitive biological resources associated with the project area. The Worker Environmental Awareness Program must:

1. Be developed by the Designated Biologist and consist of an on-site or training center presentation or video presentation in which supporting written material is made available to all participants;

2. Discuss the locations and types of sensitive biological resources in coastal sage scrub and riparian habitat along the San Luis Rey River, the meaning of various temporary and permanent habitat protection measures, Best Management Practices described in BIO 6, and the reasons for protecting these resources; and

3. Identify whom to contact if there are further comments and questions about the material discussed in the program.

The specific program can be administered by a competent individual(s) acceptable to the Designated Biologist. Each participant in the on-site Worker Environmental Awareness Program shall sign a statement declaring that the individual understands and shall abide by the guidelines set forth in the program materials. The person administering the program shall also sign each statement.

Verification: At least sixty (60) days prior to the start of any project-related ground disturbance activities, the project owner shall provide copies of the Worker Environmental Awareness Program and all supporting written materials prepared by the Designated Biologist and the name and qualifications of the person(s) administering the program to the CPM for approval. The project owner shall state in the Monthly Compliance Report the number of persons who have completed the training in the prior month and a running total of all persons who have completed the training to date. The signed statements for the construction phase shall be kept on file by the project owner and made available for examination by the CPM for a period of at least six (6) months after the start of commercial operation. During project operation, signed statements for active project operational personnel shall be kept on file for the duration of their employment and for six (6) months after their termination.

BIOLOGICAL RESOURCES MITIGATION IMPLEMENTATION AND MONITORING PLAN

BIO-5 The project owner shall submit to the CPM for review and approval a copy of the final Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) and shall implement the measures identified in the plan. Any changes made to the adopted BRMIMP must be made in consultation with the Energy Commission as well as with the USFWS and CDFG. The final BRMIMP shall identify:

1. All biological resources mitigation, monitoring, and compliance conditions included in the Energy Commission's Final Decision;

2. All sensitive biological resources to be impacted, avoided, or mitigated by project construction, operation, and closure;

3. All relevant mitigation measures provided in the draft North County Multiple Species Conservation Program Plan;

4. All required mitigation measures/avoidance strategies for each sensitive biological resource, including pre-construction flagging of non-disturbance areas to protect Parry's tetracoccus, drainages, riparian habitat of the San Luis Rey River, and coastal sage scrub;

5. All locations, on a map of suitable scale, of laydown areas and areas requiring temporary protection and avoidance during construction, including drainages, riparian habitat of the San Luis Rey River, and coastal sage scrub;

6. Duration for each type of monitoring and a description of monitoring methodologies and frequency;

7. Performance standards to be used to help decide if/when proposed mitigation is or is not successful;

8. All performance standards and remedial measures to be implemented if performance standards are not met;

9. A discussion of biological resource-related facility closure measures; and

10. A process for proposing plan modifications to the CPM and appropriate agencies for review and approval.

Verification: At least sixty (60) days prior to start of any project-related ground disturbance activities, the project owner shall provide the CPM with the final version of the BRMIMP, and the CPM will determine the plan's acceptability within 15 days of receipt of the final plan. All modifications to the approved BRMIMP must be made only after consultation with San Diego County, Energy Commission, USFWS, and CDFG. The project owner shall notify the CPM five (5) working days before implementing any CPM-approved modifications to the BRMIMP.

Within 30 days after completion of project construction, the project owner shall provide to the CPM for review and approval, a written report identifying which items of the BRMIMP have been completed, a summary of all modifications to mitigation measures made during the project's construction phase, and which mitigation and monitoring plan items are still outstanding.

BEST MANAGEMENT PRACTICES

BIO-6 Construction workers should implement Best Management Practices during all construction activities to avoid impacts to protected species and their habitat during construction. Employees working on the OGP shall:

1. Confine their activities and storage of vehicles, equipment, and construction materials to the fenced project footprint;

2. Enclose all food related trash items in sealed containers and remove them regularly from the project site to avoid attracting predators of sensitive wildlife;

3. Refrain from bringing dogs or other pets to the project site;

4. Avoid disposal or temporary placement of excess fill, brush, or other debris within drainages and riparian habitat;

5. Install escape ramps within open trenches and bore pits to provide egress for animals that may fall into these cavities and become trapped;

6. Minimize ingress and egress of construction equipment and personnel to riparian habitat along the San Luis Rey River;

7. Conduct all equipment maintenance, staging, and dispensing of fuel, oil, coolant, or any other such activities within the fenced project limits. Areas for equipment maintenance should be designated only in previously compacted and disturbed sites and shown on construction plans;

8. Check equipment for leaks prior to operation and repair as necessary.

Verification: All Best Management Practices and their implementation methods shall be included in the BRMIMP. Implementation of the measures will be described in the Monthly Compliance Reports and provided to the CPM. Within thirty (30) days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written construction termination report identifying how BMPs have been completed.

LIMITED CONSTRUCTION PERIODS/CONSTRUCTION METHODS

BIO-7 To prevent direct impacts to sensitive species inhabiting coastal sage scrub and riparian habitat along the San Luis Rey River, the following measures shall be implemented in riparian and coastal sage scrub habitat areas**:**

1. To avoid impacts to arroyo toad, least Bell's vireo, and other sensitive species inhabiting the riparian habitat on the San Luis Rey River, no construction activities should occur within 300 feet of riparian habitat from March 1 through September 15. This limited construction window encompasses the breeding/active season for arroyo toads (March 1 through August 31) and least Bell's vireo and other bird species inhabiting riparian habitat (March 15 through September 15);

2. To avoid impacts to riparian vegetation and reduce the risk of water quality impacts, horizontal directional drilling shall be used rather than trenching to install the gas pipeline in the unpaved road through riparian habitat (the road shown on Figure 3 of the AFC (OGE 2008a) that extends from "East Dairy Farm Area" to "West Dairy Farm Area");

3. To avoid impacts to coastal California gnatcatcher and other sensitive birds nesting in coastal sage scrub, no vegetation removal or surface-disturbing activities shall occur within 500 feet of coastal sage scrub from February 15 through August 31. The County of San Diego Director of Public Works and CPM may waive this condition, through written concurrence from the Designated Biologist, USFWS, and CDFG, if no nests are present in the vicinity of the brushing, clearing, or grading (see Condition of Certification **BIO-8**);

4. The Designated Biologist shall be present for all initial clearing and grubbing activities within coastal sage scrub to ensure compliance with all Conditions of Certification.

Verification: The limited construction periods and methods described above shall be included in the BRMIMP. Implementation of the measures will be described in the Monthly Compliance Reports and provided to the CPM. Within thirty (30) days after completion of project construction, the project owner shall provide to the CPM, for

review and approval, a written construction termination report identifying how limited construction periods and methods have been completed.

PRE-CONSTRUCTION NEST SURVEYS

BIO-8 Pre-construction nest surveys shall be conducted if construction activities will occur within 500 feet of Diegan coastal sage scrub habitat from February 15 through August 31, or within 300 feet of riparian habitat from March 15 through September 15. The Designated Biologist shall perform surveys in accordance with the following guidelines:

1. Surveys shall cover all potential nesting habitat within 500 feet of the boundaries of the OGP site and linear facilities;

2. At least two pre-construction surveys shall be conducted, separated by a minimum 10-day interval. One of the surveys needs to be conducted within the 14-day period preceding initiation of construction activity. Additional follow-up surveys may be required if periods of construction inactivity exceed three weeks, an interval during which birds may establish a nesting territory and initiate egg laying and incubation;

3. If active nests of non-listed species are detected during the survey, a buffer zone (protected area surrounding the nest, the size of which is to be determined by the Designated Biologist in consultation with CDFG) and monitoring plan shall be developed. Nest locations shall be mapped and submitted, along with a report stating the survey results, to the CPM;

4. The Designated Biologist shall monitor the nest until he or she determines that nestlings have fledged and dispersed; activities that might, in the opinion of the Designated Biologist, disturb nesting activities, shall be prohibited within the buffer zone until such a determination is made; and

5. If active nests of least Bell's vireo or southwestern willow flycatcher are detected within 300 feet of proposed construction, or if active nests of coastal California gnatcatcher are detected within 500 feet, such construction shall cease until the Designated Biologist determines that the nestlings have fledged and dispersed, and

Verification: At least ten (10) days prior to the start of any project-related ground disturbance activities, the project owner shall provide the CPM a letter-report describing the findings of the pre-construction nest surveys, including the time, date, and duration of the survey; identity and qualifications of the surveyor (s); and a list of species observed. If active nests are detected during the survey, the report shall include a map or aerial photo identifying the location of the nest and shall depict the boundaries of the no-disturbance buffer zone around the nest.

ENVIRONMENTALLY SENSITIVE AREAS

BIO-9 At least two weeks prior to construction activities and vegetation clearing, including clearing within fuel modification zones, the Designated Biologist shall identify and flag biologically sensitive areas that are to be protected as Environmentally Sensitive Areas (ESAs) during construction. Orange

construction fencing shall be installed around these flagged ESAs wherever work is proposed within 50 feet of these sensitive features. Vegetation clearing and surface-disturbing activities shall not begin until the ESAs are delineated on the ground with the fencing, and the fencing shall remain in place for the duration of construction. No vehicles, heavy equipment, vegetation removal, storage of material, or surface disturbing activities or other construction shall be permitted within the ESAs. The ESA's shall be established as follows:

1. Around the drip line of all Parry's tetracoccus shrubs located within 50 feet of proposed fuel reduction activities, including Pala del Norte Road and around the site;

2. At the coastal sage scrub habitat bordering the proposed gas pipeline alignment (Segments A and B, Figure 3, Appendix 6.5-B, OGE 2008a). All coastal sage scrub habitat beyond the designated gas pipeline work area shall be fenced in this area;

3. Within coastal sage scrub habitat along Pala del Norte Road and around the power plant site, ESA fencings shall be established to limit fuel reduction zones to a 100-foot clearance around structures and 30-foot clearance from the road; and

4. At all riparian habitat within 50 feet of proposed laydown and staging areas, bore pit excavations, spoils piles, and any other areas subject to construction traffic, vegetation removal, or surface disturbing activities. This includes riparian habitat along the San Luis Rey River on both sides of the dirt road between East Dairy Farm Area and West Dairy Farm (depicted in Figure 3, OGE 2008a).

For horizontal directional drilling and other construction activities near drainages, ESAs shall be established as follows:

1. At all ephemeral drainages where bore pit excavations are dug into a soil or rock surface, the bore pit excavations shall be located at least 20 feet from boundary of jurisdictional waters of the State. The CDFG may establish a greater setback at certain drainages if site conditions warrant, which will be described in the Streambed Alteration Agreement that will be issued for this project. A lesser setback may be approved by the Designated Biologist and CDFG if it can be demonstrated that the bore pit will be excavated in competent ground with no material risk of caving that could disturb jurisdictional waters, and that other appropriate precautions are also in place to prevent surface disturbance to the drainage and to downstream water quality.

2. Where bore pit excavations are dug into Pala del Norte Road, the bore pit excavations shall be located either at least 20 feet from jurisdictional waters or three feet inside the edge of pavement.

3. Where grading or excavation work for the access road bridge over Drainage #1 occurs within 20 feet of jurisdictional waters of the State, grading and excavation work shall be monitored full-time to assure that there is no surface disturbance to jurisdictional waters or impacts to downstream water quality. The CDFG may establish additional conditions to protect waters of the state and water quality, which will be described in the Streambed Alteration Agreement that will be issued for this project.

Verification: At least 10 days prior to the start any project-related ground disturbance activities, the project owner shall provide written and photographic verification to the CPM that ESA fencing has been established at the sensitive biological resources described above.

HABITAT LOSS PERMIT

BIO-10 Prior to approval of grading or improvement plans the project owner shall provide evidence to the satisfaction of the San Diego County Director of Public Works and the CPM that 18.6 acres of Diegan coastal sage scrub, and 6.8 acres of non-native annual grassland, has been secured in a mitigation bank approved by the California Department of Fish & Game and the U.S. Fish and Wildlife Service. Evidence of purchase shall include the following information, to be provided by the project owner and mitigation bank:

1. A copy of the purchase contract referencing the project name and numbers for which the habitat credits were purchased.

2. If not stated explicitly in the purchase contract, a separate letter must be provided identifying the entity responsible for the long-term management and monitoring of the preserved land.

3. To ensure the land will be protected in perpetuity, evidence must be provided that a dedicated conservation easement or similar land constraint has been placed over the mitigation land.

4. An accounting of the status of the mitigation bank. This shall include the total amount of credits available at the bank, the amount required by this project, and the amount remaining after utilization by this project.

The project owner shall also provide evidence to the CPM that the Habitat Loss Permit includes the following Conditions of Approval:

1. Grading and plans shall include the following information for all activities within coastal sage scrub habitat: “Restrict all brushing, clearing and/or grading such that none will be allowed during the avian breeding season (February 15 through August 31). The Director of Public Works and CPM may waive this condition, through written concurrence from the US Fish and Wildlife Service and the California Department of Fish and Game, that no nests are present in the vicinity of the brushing, clearing or grading.”

2. Within coastal sage scrub habitat fuel reduction zones shall be limited to a 100-foot clearance around structures and 30-foot clearance around roads

in the vicinity of native habitats such as coastal sage scrub. The Designated Biologist shall flag the limits of fuel reduction clearing within coastal sage scrub habitat prior to initiating vegetation clearing activities.

Verification: At least 30 days prior to start of any project-related ground disturbance activities, the project owner shall provide evidence to the CPM that 18.6 acres of Diegan coastal sage scrub, and 6.8 acres of non-native annual grassland has been secured in a mitigation bank approved by the California Department of Fish & Game and the U.S. Fish and Wildlife Service, and that other Conditions of Approval described in the Habitat Loss Permit have been incorporated into the BRMIMP and implemented.

PARRY'S TETRACOCCUS MITIGATION PLAN

BIO-11 The project owner shall implement the Parry's tetracoccus mitigation plan described in OGE 2008g (Attachment 4 - Revised Exhibit 39-1, Response to Data Requests at September 11, 2008 Workshop (*Parry's Tetracoccus Conceptual Mitigation Plan, Orange Grove Project, San Diego County, California. August 2008, revised September 2008. Prepared for Orange Grove Energy, L.P. by TRC, Irvine, CA*). The basic components of this mitigation plan include establishment of a 0.09-acre mitigation area in the northern corner of the 8.5 project site; collection of seeds/cuttings from Parry's tetracoccus at the project site in the fall prior to construction, site preparation; and planting of at least 26 Parry's tetracoccus plants propagated from the local plant material. The mitigation plan calls for five years of monitoring/maintenance, and protection of the mitigation site for the life of the project:

Verification: At least 60 days prior to the start of any project-related ground disturbance activities, the project owner shall provide written and photographic evidence to the CPM that Parry's tetracoccus seeds or cuttings have been collected and that these plant materials are being propagated at a qualified nursery. No later than December 31st of the year during which construction begins, the project owner shall provide written and photographic documentation that plantings have occurred as described in the Parry's tetracoccus mitigation plan. The Designated Biologist shall maintain written records of the tasks described above, and summaries of these records shall be submitted along with the Monthly Compliance Reports to the CPM. During project operation, the Designated Biologist shall submit record summaries in the Annual Compliance Report for a period until performance criteria described in the mitigation plan have been achieved (five years or more).

ARROYO TOAD EXCLUSION FENCING

BIO-12 If construction activities or construction-related vehicular traffic will occur within riparian habitat between March 1 and September 15, a toad exclusion fence shall be installed to prevent arroyo toad access to areas subject to traffic and construction activities. This fence shall be installed on the southwest side of the dirt road located between "East Dairy Farm Area" and "West Dairy Farm Area" (depicted in Figure 3, OGE 2008a). Fencing shall consist of woven nylon netting approximately three feet in height attached to wooden stakes. Prior to installing the fencing, a narrow trench approximately 3-6 inches in depth would be excavated and the fence buried, to prevent

burrowing beneath the fence. Toad exclusionary fencing shall be checked daily by the Designated Biologist before and after each day's construction activities for damage and all necessary repairs should be made immediately. All fencing shall be removed following completion of all project related activities.

Verification: At least 30 days prior to the initiation of any project-related ground disturbance activities south of SR 76, the project owner shall submit written and photographic verification that the toad exclusion fencing has been installed. Implementation of the arroyo toad exclusion fencing measures will be monitored by the Designated Biologist and described in the Monthly Compliance Reports and provided to the CPM. Within 30 days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written construction termination report identifying how arroyo toad avoidance measures have been completed.

IMPACTS TO GREGORY CANYON MITIGATION LANDS

BIO-13 The project owner shall secure habitat compensation credits for 4.4 acres of oak woodland in a mitigation bank approved by the California Department of Fish & Game, the U.S. Fish and Wildlife Service, and the County of San Diego to compensate for impacts to future Gregory Canyon Landfill mitigation lands, and shall provide written verification that this proposed compensatory mitigation is satisfactory to CDFG and USFWS. Evidence of purchase shall include the following information, to be provided by the mitigation bank:

1. A copy of the purchase contract referencing the project name and numbers for which the habitat credits were purchased.

2. If not stated explicitly in the purchase contract, a separate letter must be provided identifying the entity responsible for the long-term management and monitoring of the preserved land.

3. To ensure the land will be protected in perpetuity, evidence must be provided that a dedicated conservation easement or similar land constraint has been placed over the mitigation land.

4. An accounting of the status of the mitigation bank. This shall include the total amount of credits available at the bank, the amount required by this project and the amount remaining after utilization by this project.

Verification: At least 60 days prior to the initiation of construction activities within gas pipeline Segments C and D (Figure 3, Appendix 6.5-B, OGE 2008a), the project owner shall submit written verification that habitat compensation credits for 4.4 acres of oak woodland have been secured in a mitigation bank approved by the CDFG and USFWS to compensate for impacts to future Gregory Canyon Landfill mitigation lands. The project owner shall also provide written verification that this proposed compensatory mitigation is satisfactory to CDFG and USFWS.

STREAMBED ALTERATION AGREEMENT

BIO–14 The project owner shall implement all terms and conditions described in the Streambed Alteration Agreement that will be issued for this project

(Notification of Lake or Streambed Alteration Agreement No. 1600-2008-0286-R5), and shall incorporate these measures within the BRMIMP.

Verification: All terms and conditions described in the CDFG Streambed Alteration Agreement shall be included in the BRMIMP. Implementation of these terms and conditions will be described in the Monthly Compliance Reports and provided to the CPM. Within thirty 30 days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written construction termination report describing how Streambed Alteration Agreement conditions have been satisfied.

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CULTURAL RESOURCES

Testimony of Amanda Blosser, Michael D. McGuirt, and Beverly E. Bastian

SUMMARY OF CONCLUSIONS

Staff's cultural resources analysis has determined that the proposed Orange Grove Project (OGP) would have no impact on known significant archaeological resources, historic standing structures, ethnographic resources, historic districts, or cultural landscapes. With the adoption of cultural resources Conditions of Certification **CUL-1** through **CUL-7**, the OGP would have no significant impact on as-yet-unidentified buried archaeological deposits.

These conditions are intended to provide for the identification and assessment of any buried archaeological resources discovered during project-related excavations, and for the mitigation of any significant impacts from the project on any newly identified resources assessed as eligible for the California Register of Historic Resources (CRHR). To accomplish this, conditions provide for the hiring of a Cultural Resources Specialist, archaeological monitors, and a Native American monitor to observe ground-disturbing activities and for cultural resources awareness training for construction workers. Other conditions provide for the recovery of data from CRHR-eligible discovered archaeological deposits, for the writing of a technical archaeological report on all archaeological activities and results, and for the curation of recovered artifacts and other data. When properly implemented and enforced, these conditions of certification would reduce to less than significant any impacts to cultural resources during the project's construction or operation. Additionally, with the adoption and implementation of these conditions, the project would be in conformity with all applicable laws, ordinances, regulations, and standards (LORS).

INTRODUCTION

This cultural resources assessment identifies the potential impacts of the Orange Grove Project on cultural resources. Cultural resources are defined under state law as buildings, sites, structures, objects, and historic districts and are generally divided into three kinds of resources: prehistoric, ethnographic, and historic.

Prehistoric archaeological resources are those materials relating to prehistoric human occupation and use of an area. These resources may include sites and deposits, structures, artifacts, rock art, trails, and other traces of Native American human behavior. In California, the prehistoric period began over 12,000 years ago and extended through the eighteenth century until 1769, when the first Europeans settled in California.

Ethnographic resources are those materials, locations, and structures important to the heritage of a particular ethnic or cultural group, such as Native Americans or African, European, or Asian immigrants. They may include traditional resource collecting areas, ceremonial sites, topographic features, cemeteries, shrines, or ethnic neighborhoods and structures. And are historical resources that are associated with cultural practices or beliefs of a living community that are rooted in the community's history and are

important in maintaining the continuing cultural identity of the community. They are tangible resources—that is a building, structure, historic district, site, or object.

Historic-period resources include archaeological deposits and standing structures usually associated with Euro-American exploration and settlement of an area and the beginning of a written historical record. They may include archaeological deposits, sites, structures, traveled ways, artifacts, or other evidence of human activity. Under federal and state requirements, historic resources must be greater than fifty years old to be considered of potential historic importance. A resource less than fifty years of age may be historically important if the resource is of exceptional importance.

For the OGP, staff provides an overview of the environmental setting and history of the project area, an inventory of the cultural resources identified in the project vicinity, recommendations of eligibility for the California Register of Historical Resources (CRHR) for those resources, and an analysis of the potential impacts to those historical resources from the proposed project using criteria from the California Environmental Quality Act

Staff determines which cultural resources identified in the OGP vicinity are CRHR-eligible and evaluates all project-related impacts to those. If significant project impacts to CRHR-eligible cultural resources cannot be avoided, staff recommends mitigation measures to reduce those impacts to below the level of significance.

Staff's primary concern is to ensure that all potentially CRHR-eligible cultural resources are identified, that all potential impacts to those are identified and evaluated, and that all significant impacts are mitigated to a less-than-significant level.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Projects licensed by the Energy Commission are reviewed to ensure compliance with all applicable laws. For this project, which has no federal involvement,[1] the applicable laws are primarily state laws. Although the Energy Commission has exclusive permitting authority over OGP, it typically ensures compliance with all applicable laws, ordinances, regulations, standards, plans, and policies.

[1] Cultural resources in California are also protected under provisions of the federal Antiquities Act of 1906 (Title 16, United States Code, section 431 et seq.) and subsequent related legislation, policies, and enacting responsibilities, e.g., federal agency regulations and guidelines for implementation of the Antiquities Act.

Cultural Resources Table 1
Laws, Ordinances, Regulations, and Standards

Applicable Law	Description
State	
Health and Safety Code, section 7050.5	Makes it a misdemeanor to disturb or remove human remains found outside a cemetery; also requires a project owner to halt construction if human remains are discovered and to contact the county coroner.
Public Resources Code 5097.98 (b) and (e)	Requires a landowner on whose property Native American human remains are found to limit further development activity in the vicinity until he/she confers with the NAHC-identified Most Likely Descendents (MLDs) to consider treatment options. In the absence of MLDs or of a treatment acceptable to all parties, the landowner is required to reinter the remains elsewhere on the property in a location not subject to further disturbance.
Local	
County of San Diego Resource Protection Ordinance (Ordinance No. 9842, County Code Chapter 6)	Requires that a resource protection study be performed to evaluate the potential for the project to impact cultural resources. Provides for protection of archaeological and historic resources within the County, and prohibits impacts to resources considered significant under the County guidelines.
Conservation Element of the San Diego County General Plan	Uses the Environmental Impact Report process to evaluate the potential impacts of proposed projects to cultural resources. Prohibits excavation of archaeological sites except by qualified archaeologists.
Zoning Ordinance, sections 5700-5749	Requires a landowner to submit a site plan concerning changes to historic resources to the County for approval.

SETTING

REGIONAL SETTING

The proposed project would be located on an approximately 41-acre parcel located east of Monserrate Mountain, north of the San Luis Rey River, west of the community of Pala and the Pala Indian Reservation, and approximately 4.0 miles west of the Cleveland National Forest. The project would be within the Peninsular Ranges geomorphic province of California, located in the southwestern part of the state, with a coastal plain on the west and rugged mountains with steep-walled valleys inland. The region is primarily rural, comprised of agricultural lands used for pasture, orchards, and truck crops in the southeastern portion, and for small rural residential parcels and open space

(OGE2008a, pp. 6.6-2–6.6-3, 6.7-1). The site sits on an old alluvial fan with a 10% grade, surrounded on the east, north, and west by moderately steep hillsides comprised of igneous basement rocks.

SITE, VICINITY, AND PROJECT DESCRIPTION

The proposed project is located near State Route (SR) 76, also known locally as Pala Road, approximately 3.5 miles east of Interstate 15 (I-15) in rural San Diego County. The site is approximately 2.0 miles east of the community of Pala and 5.0 miles west of Fallbrook. The project site has been used for agricultural purposes since the late 1930s and sits adjacent to San Diego Gas &Electric's (SDG&E) Pala Substation. Currently the remains of a citrus orchard, abandoned after the site was used by California Institute of Technology for field testing, are present on the project site. On the south side of the project site, an old aggregate mine and several dairies occupy part of the San Luis Rey River flood plain. The Pala Band of Mission Indians has acquired the gravel mine, which is no longer in operation, and the dairies are also in disuse (OGE2008a, pp. 1-3–1-4).

The proposed OGP is a 96-MW peaker facility that is expected to operate about 60 days a year. The project will consist of the following components:

- A 96-MW electric generating plant located on an approximately 8.5-acre site;
- An approximately 0.3-mile-long, underground electric transmission line interconnection between the site and the existing Pala Substation;
- An approximately 2.4-mile-long, natural gas pipeline that would connect the site to an existing SDG&E regional gas transmission main;
- A fresh-water pick-up station where water trucks would be filled from an existing Fallbrook Public Utility District water main for hauling to the site; and
- Pala Substation upgrades as required for interconnection and transmission system mitigation to be agreed upon with the California Independent System Operator (California ISO) and SDG&E.

A result of the proposed project, but not part of the project itself, would be the reconductoring of approximately eight miles of existing SDG&E transmission line between Monserate and Pala substation. As part of this process new poles would need to be installed and equipment would need to be replaced (OGE2008f, p. 0). A discussion of the cultural resources literature search and survey the area around components of the transmission line is included in the Archaeological Resources portion of this document.

Prehistoric Setting

Human Occupation of Southern California

The earliest generally accepted evidence for the human occupation of the North American continent dates to the geological epoch known as the Late Pleistocene, about 10,000 years BC. The evidence occurs primarily in the form of large, very skillfully made stone spear points, sometimes found in association with the bones of large game animals. This occupation is known archaeologically as the Big Game Hunting Tradition.

The Big Game Hunting Tradition, centered in the Great Plains and American Southwest, but evidenced all over the continent, apparently had a nearly exclusive focus on the exploitation of now-extinct giant mammals (megafauna), such as mammoths and giant bison. Archaeologists believe that California did not have the Big Game Hunting Tradition, although its characteristic fluted projectile points have been found all over the state. Rather, California's Late Pleistocene peoples were forced to adopt a general hunter-forager subsistence mode and to live near reliable water sources where food and plant resources were consistently available when the glaciers of the Pleistocene era retreated and the warmer and drier climate of the succeeding geological era, the Holocene, caused major environmental changes, including a rise in sea level along the coast, desiccation of the formerly plentiful inland lakes, and extinction of megafauna (Moratto 1984, pp. 78–81; Byrd and Raab 2007, p. 215).

Early Holocene Cultures (9600–5600 BC)

For the Early Holocene epoch, previous archaeological interpretations had characterized a prevailing, region-wide hunting tradition in Southern California, known as the Western Pluvial Lakes Tradition, as follows: site locations on or near shorelines of bodies of fresh water; economy based on hunting a variety of animals and birds and gathering shellfish and vegetal products; the absence of ground-stone artifacts (indicating no use of hard seeds as food); distinctive percussion-flaked stone artifacts; and a diverse stone toolkit. Gradually, archaeologists thought, people carrying this tradition spread to the coast where they increasingly exploited marine foods in the later part of this period (Moratto 1984, pp. 90–103; Byrd and Raab 2007, p. 218).

Moratto sums up the primary cultural-historical developments of the Early Holocene era in Southern California, listing several trends: increasing regional specialization, increasing technological diversification, increasing population, increasing sedentism, and intensification of use of plant resources (Moratto 1984, p. 113, Table 3.10).

Middle Holocene Cultures (5600–1500 BC)

After 5000 BC, the climate and environment that revail today were established in California. Previous archaeological interpretations saw Native Americans in Middle Holocene Southern California refining their exploitative abilities by developing their technology and adapting to the seasonal availability of a wide variety of local food sources through a mobile lifestyle that required no substantial houses or permanent villages. One of the key technological developments of this era was the millingstone, which was a rock slab or shallow basin shaped by painstaking grinding with a smaller rock and used to process hard seeds into meal. Along with millingstones, important developments in this era in Southern California were: the appearance of many large shell midden sites on the bays and estuaries of what are now San Diego and Orange Counties; the wide regional distribution of shell beads; and the introduction of pottery and clay figurines. These developments were thought to signal the greater exploitation of marine resources on the coast, the greater exploitation of vegetal food sources throughout the region, and the development of a regional trading network (Moratto 1984, pp. 147–153).

While the coastal shell middens, known as the La Jolla Culture, were the archaeological type site for the Middle Holocene period, archaeologists also identified two variants

which co-existed with the shell midden sites during this time period: the Pauma Culture and the Sayles Culture, known from inland sites. Archaeologists characterize the three collectively as “Millingstone” cultures because sites of all three evidence extensive use of millingstones, an indication of dependence on vegetal food sources. Comparisons of sites of the three cultures suggest a basic similarity in subsistence among them, with variations reflecting adaptation to particular local resources, with shellfish remains being absent at Pauma and Sayles sites.

The late Middle Holocene cultures of San Diego County are not well understood and archaeologists have theorized that occupation was reduced from 3000 BC to 1500 BC. However, it is unlikely the interior was completely abandoned, and this portion of the archaeological record may be similar to previous and later periods that seem “invisible,” or the inhabitants may have followed a more ephemeral lifestyle not easily seen in the archaeological record.

Late Holocene Cultures (1500 BC–1769 AD)

Previous archaeological interpretations of this period in Southern California identify it as the developmental time for the Native American groups and lifeways that Euro-Americans encountered and described. These interpretations recognized three gradual changes: increasing social complexity in adaptation to a stable, resource-rich environment; assimilation of the technology and practices of Northern and Central California Native American groups; and immigration to the coastal area by Native American groups from the eastern interior (Moratto 1984, p. 153; Byrd and Raab 2007, p. 222). The most important new practice introduced from Northern and Central California into Southern California was the technology of processing acorns for food, in particular ground-stone mortars and pestles. Another new practice introduced in this period was cremation of the dead, probably adopted from Native American groups to the east. The use of the bow and arrow and of pottery emerged during this period, as well.

To explain these changes, archaeologists pointed to linguistic evidence, which suggested that, beginning around 500 BC at the latest, newcomers emigrated from the Great Basin area to the coast between northern San Diego County and southern Los Angeles County. The migrants displaced the resident groups but rapidly adopted the local technology and economic practices. The descendants of the migrants include the Luiseños, Gabrielinos, and Nicoleños. The migrants’ displaced neighbors to the north were probably the ancestors of the Chumash, and to the south, the ancestors of the Diegueños (Moratto 1984, pp. 156, 164–165).

A more recent archaeological interpretation of the Late Holocene, based on several subsequent decades of field work, again, in part contradicts and in part refines key aspects of the earlier interpretation. Instead of environmental stability and an adaptive balance between the population and the resources, the new interpretation sees a trend toward overexploitation of high-value food species resulting in intensified use of less-productive food species and less foraging efficiency over time. A related change in settlement pattern occurred in the Late Holocene, in which three linked kinds of sites were arrayed over a group’s territory: large, permanent residential bases, short-term, satellite, residential camps, and specialized-activity sites, facilitating the necessary intensified use of lesser-value foods. A related change in social complexity is posited,

brought about by the need for structured decision-making and labor assignment, resulting in the emergence of differing social statuses within a group. A possibly causal factor is implicated by paleoenvironmental data, which indicate that periods of drought and other environmental stresses may have required rapid adaptation and could have played a role in all of these changes (Byrd and Raab 2007, pp. 224–225). The newer interpretation additionally explains the Late Holocene immigration of Great Basin newcomers into Southern California as the continuation and expansion of the linkages between the two areas forged in the Middle Holocene via the shell bead trade network (Byrd and Raab 2007, p. 221).

Ethnographic Setting

The proposed project area is in territory thought to be formerly occupied by the Native American group known as the Luiseño. Later, at the time of European settlement, the Cupa were relocated to the Pala Valley. The greater Luiseño population was geographically associated with approximately 1,500 square miles of coastal Southern California, from Agua Hedionda to Alviso Creek on the north, west to Santiago Peak, and southwest to Mt. Palomar. Their territory covered most of the San Margarita River drainage and the San Luis River drainage (Bean and Shipek, 1978). The Luiseño were a Takic-speaking tribe that used all of the ecological zones of their territory: the ocean, sandy beaches, inlets, marshes, coastal chaparral, lush grassy valleys, oak groves, and pine and cedar forests on Mt. Palomar (ASM 2006, pp. 28-29).

The Luiseño maintained a hunter-and-gatherer economy based around autonomous semi-sedentary village groups, each with hunting and gathering areas. The variety in the ecological zones allowed for regional variations in subsistence strategies, but plant foods were the dominant source of dietary calories, with the acorn making up the largest portion of the diet. Fire was used to manage and enhance plant growth, and some researchers have argued that crop management was part of Luiseño food gathering. Game animals such as rabbit, deer, jackrabbit, and number of other medium-to-small size animals provided a large amount of dietary protein. Marine fish and shellfish were a mainstay for some groups that were based on the coast, but it is not clear how much marine foods were utilized by the interior groups (Bean and Shipek 1978, pp. 550-551).

The Luiseño had developed a varied material culture. An array of tools made from stone, wood, bone, and shell, were used to gather and process food, and because of the mild climate, needs for shelter and clothing were minimal. Great attention was paid to personal adornment despite the minimal need for clothing (OGE2008a, pp. 6.7-4–6.7-5).

Each village was a patrilineal tribelet headed by a chief and his advisors and assistants. Community membership was generally inherited through the male line. In some areas, year-round villages existed, with more remote resources being acquired by special groups. Other communities followed the more traditional pattern of seasonal camps (OGE2008a, pp. 6.7-4–6.7-5).

In 1796, the Spanish were the first Europeans to come into contact with the Luiseño. As with the rest of California, the arrival of Europeans brought disease and colonization to the Native Americans. The people of Pala region were brought into the Spanish political system with the establishment of Mission San Luis Rey.

After European contact, the Cupeño were relocated to the Pala Valley. Cupa, a Spanish name derived from the word *Kuupangaxwichem*, or “people who slept here” was one of the smallest bands of Native Americans in California, and it is unlikely they ever numbered more than a thousand persons. They once occupied a territory 10 square miles in diameter in an area of the upper watershed of the San Luis Rey River in the valley of San Jose de Valle (Pala Band 2006). Once Europeans began to travel to the Warner Springs area to take advantage of the mineral springs, the United States Indian Bureau evicted the Cupa from their territorial land near Warner Springs, and they were relocated to the present day Pala Valley on a 10,000-acre reservation in 1903. Today both the Luiseño and Cupeño descendants live on the Pala Reservation and call themselves the Pala Band of Mission Indians (Pala Band 2006).

Historic Setting

European American settlement began with the establishment of the Mission San Luis Rey de Francia in 1798 under the supervision of Padre Presidente Fermin Francisco de Lausen. The mission was established approximately four miles east of Interstate 5 and State Route 76, also called Mission Road. A granary for the mission was established in present day Pala in 1810 on a site that was known as a Native American gathering spot, and a ramada was added in order to hold morning mass. Soon after a chapel and bell tower were constructed and the complex was established as an Asistencia or annex. It was dedicated as Mission San Antonio de Pala. The natural route of travel between San Luis Rey and Pala would have followed the San Luis Rey River through staff’s area of analysis (OGE2008a, pp. 6.7-2–6.7-3).

Continued disruption to the native peoples in western San Diego County occurred in the early nineteenth century from the rising number of private land grants, Mexico’s separation from the Spanish Empire in 1821, and the secularization of the Mission system in the 1830s. Mission lands were broken up and granted to Mexican citizens for use as cattle ranches called ranchos. Some of the former neophytes were pulled into work on these cattle ranches while others would migrate to cities such as San Diego or join communities of native peoples that were largely autonomous. Land in the Pala Valley was parceled into private holdings, which included Rancho Monserrate, a 13,322-acre Mexican grant located approximately two miles from the project area. It was granted in 1846.

During the Mexican-American War, 1846-1848, the Mormon Battalion opened the first wagon road through San Diego from the east, passing through the area west of I-15 and Mission San Luis Rey. The Gold Rush in the northern part of the state, together with the annexation of California by the United States in 1850, brought more outsiders into the region. During the 1860s and 1870s, settlers began moving into the San Luis Rey River valley and acquired land through homesteading or purchase and established farmsteads (ASM 2008, p. 31).

During the late 1800s, the San Luis Rey River valley was the center of a dairy industry and supported larger ranches and small farms that pursued a diversified agricultural economy. Crops cultivated in the valley included corn, barley, wheat, alfalfa, sweet potatoes, watermelons, and onions. Land in the Pala Valley in staff’s area of analysis was largely undeveloped during the early part of the nineteenth century through the turn of the twentieth century. Portions of Section 29 and 32 (the location of the proposed

power plant site) were deeded to six different individuals at the end of the nineteenth century, then were consolidated into three larger parcels at the beginning of the twentieth century, and continued to be split in varying sizes of parcels during the subsequent years. It does not appear that any residences or structures were constructed on the project site during the late nineteenth and early twentieth centuries (Urbana 2008, p. 4; OGE2008a, pp. 6.7-18–6.7-19).

American William Veale purchased the Asistencia San Antonio de Pala and its lands from the United States in 1877. Veale's wife, reportedly a devoted Roman Catholic, persuaded Veale to donate the chapel and associated cemetery to the Catholic Church in 1893. As with many of the missions, the Asistencia had fallen into disrepair and as part of the growing Mission Revival movement was acquired by the California Landmarks Club of Southern California. In 1902, services in the restored chapel commenced. The same year the 10,000-acre Pala Reservation was established.

Other development in the area included the establishment of Pala Road, now known as State Route 76. The road first appears on a historic San Diego County map as a Butterfield stage route and was later incorporated into the county road system (San Diego County 1955). Historic land use patterns in the Pala Valley continued to consist largely of small agricultural operations and some nurseries during the early 1900s with little change to the setting of the valley.

The largest changes in San Diego County came during World War II and in the post-war period. During World War II, military establishments, war industries, and war housing projects accounted for over 50% of water consumption in San Diego, and resolving the impending shortage quickly became of national importance. An interdepartmental committee was appointed by President Roosevelt to study the water supply of the city and to make recommendations for securing supplemental supplies. The committee recommended immediate construction of an aqueduct connecting to the Colorado River Aqueduct near San Jacinto, with the War Department, the Navy Department and the Federal Works Agency bearing the cost. The San Diego Project was authorized by President Roosevelt as a wartime priority on November 29, 1944 and approved by the United States Congress on April 15, 1948 (USBR, 2006).

The San Diego Aqueduct was comprised of two separate aqueducts that were 70 miles long and made up the backbone of the San Diego County Water Authority system. They were designed to carry San Diego's allotted water from the Los Angeles Metropolitan Water District's (MWD) Colorado Aqueduct near San Jacinto to the City of San Diego's San Vicente Reservoir, located approximately 15 miles north of San Diego (Urbana 2008, Attachment 1; USBR 2006).

Historically, San Diego procured water through acquisition or construction of a number of dams. Prior to World War II, San Diego contracted for Colorado River water, stored in Lake Mead, the reservoir formed behind Hoover Dam, and was allotted a portion of water not to exceed 112,000 cubic feet annually. To procure additional domestic water supply, the City entered into a contract in 1934 to participate in the construction of Imperial Dam and the All-American Canal under the Boulder Canyon Project. The year San Diego Aqueduct 1 was placed into service, 1947, the San Diego County Water Authority was fully annexed into MWD. Shortly after the first aqueduct was completed,

MWD requested that the pipe be enlarged to safeguard against additional water shortages. To accomplish this, the U. S. Bureau of Reclamation proposed a second aqueduct of the same capacity as the first, 196 cubic feet per second. The Authority selected the parallel route for Aqueduct 2 (Sholders 2002, p. 6).

With the progressive urbanization of San Diego County's coastal plain during the postwar period, agriculture became a diminishing part of the county's economy. Only scattered areas of undeveloped land between Camp Pendleton and the Mexican border remained. Population pressures and high property taxes forced farmers to sell their land. The Pala Valley became more accessible with the construction of I-15 and the Golden State Freeway (I-5), and small-scale, commercial roadside development occurred in the area of analysis.

The land at the project site was purchased by Gary Driscoll and Robert and Gale Driscoll. It was under their ownership that the citrus orchard at the project site was planted and cultivated. In the area of analysis, during the 1960s and 1970s, several dairy operations were established and several of the dairies' structures still remain along the route of the gas line. At the project site, SDG&E constructed the small substation in 1964 on land leased from Robert and Gail Driscoll. In 1970, SDG&E acquired the parcel adjacent to the substation from the Driscolls. The extant structures on the project site were constructed by the California Institute of Technology for use in passive solar technology tests. During the 1990s, the buildings were converted to residential use when a caretaker lived on site (OGE2008a, pp. 6.7-19–6.7-20).

Resources Inventory

The inventory of cultural resources in the area of analysis is the first step in the assessment of whether the proposed project may cause a significant impact to a significant cultural resource and therefore have an adverse effect on the environment. The area that staff considers when identifying and assessing impacts to historical resources, called the *area of analysis* for the project, is usually defined as the area that surrounds and is within the project site and associated linears. The area varies in extent depending on whether the resource is archaeological, built-environment, or ethnographic:

- For archaeological resources, the area of analysis is routinely defined as the project site footprint plus a buffer of 200' feet and the project linear facilities routes plus 50 feet to either side of the routes.
- For built-environment resources, the area of analysis is confined to one parcel deep from the project site footprint in urban areas and is expanded to include a half-mile buffer from the project site and above-ground linears in rural areas to include resources whose setting could be adversely affected by industrial development.
- For ethnographic resources, the area of analysis is expanded to take into account traditional use areas and traditional cultural properties which may be far-ranging, including views that contribute to the significance of the property. These resources are often identified in consultation with Native Americans and other ethnic groups, and issues that are raised by these groups may define the area of analysis.

Once the area of analysis has been established, the inventory begins with a research process to gather information regarding previously known and identified historical resources, through literature and records searches and through contact with the Native American Heritage Commission and appropriate tribes. After conducting the background research, fieldwork is undertaken to identify new historical resources, which may include prehistoric and historical archaeological resources, built-environment resources, ethnographic resources, and cultural landscapes. After the inventory of both previously identified and newly identified cultural resources has been compiled, then the resources are evaluated for CRHR eligibility. These procedures for the OGP are described below.

Literature and Records Search

On March 20, 2007, TRC Companies, Inc. requested a record search at the South Coastal Information Center (SCIC) to identify any previous cultural resources studies and recorded historical resources within a 1-mile radius around the project area and within 0.5 mile to either side of linear facilities. Within one mile of the OGP, 35 archaeological sites or isolates have been recorded previously. Of these previously recorded sites or isolates, 13 were located on or near the project site or linear facilities routes (OGE2007k, Figure: Historical Resources With Trinomial Designations).

Pacific Legacy conducted a second record search on February 25, 2008, covering the reclaimed fresh-water pick-up sites for the project. A third record search was performed by Urbana Preservation and Planning, the applicant's consultant for the built environment survey, on May 26, 2008, to cover the Fallbrook Public Utilities District (FPUD) fresh-water pick-up site (OGE2008a, pp. 6.7-22–23; App. 6.7-B–D). Eight previously recorded archaeological sites are located within 0.5-mile of the FPUD., including previously recorded resource CA-SDI-14005H, a section of the Santa Fe Railroad, a built-environment historic resource located just west of the FPUD.

Urbana conducted searches of the National Register of Historic Places, California Register of Historical Resources, California State Landmarks, California Points of Historic Interest, and San Diego County Historic Sites board of director's website to determine if there were any locally listed built-environment resources within the project area or vicinity. Previous environmental documents prepared for the Pala Substation construction project were also reviewed for pertinent information.

A fourth record search was conducted on September 2, 2008 to cover the area along the route of the transmission line that would be reconductored. Twenty-two previously known sites were located within the 0.5-mile buffer of the transmission line.

Staff conducted background research to find prior geoarchaeological analyses done in the San Luis Rey River Valley upstream or downstream of the project area. Staff found a draft environmental study for the widening of Highway SR 76 between the City of Oceanside and the City of Bonsall (FHWA/Caltrans 2007, pp. 3-89–3-96). As the project area is on or adjacent to the floodplain of the San Luis Rey River, the Federal Highway Administration and Caltrans conducted a geoarchaeological analysis to evaluate the potential effects that the project could have on archaeological deposits buried in or adjacent to the San Luis Rey River floodplain (Pope 2005). The study found that the San Luis Rey River floodplain is made up of a thick sequence of alternating alluvial

deposits and buried soils, or paleosols, where the probability for buried archaeological deposits is classified as moderate (Pope 2005, pp.2–3, 7).

Native American Coordination

The applicant's cultural resources consultant, Pacific Legacy, contacted the Native American Heritage Commission (NAHC) on March 7, 2007, and requested a search of the sacred lands files to identify any traditional cultural properties within the project area. On March 20, 2007, the NAHC responded that no sacred sands were located within the project area. The NAHC also provided a list of seven Native American individuals and organizations to be contacted for further consultation. Pacific Legacy sent letters to the seven identified groups and organizations, described the project, provided a map, and requested the Native Americans to contact them if they had concerns regarding cultural resources (OGE2008a, pp. 6.7-24–6.7-25).

In response, Dr. Joseph M. Nixon of the Cupa Cultural Center contacted the applicant on April 19, 2007, requesting that he be kept informed of the progress on the project. The project site falls within the vicinity of the Pala Band's traditional use area. Dr. Nixon also contacted Wendy Tinsley of Urbana Preservation Planning after Urbana sent out letters requesting information from local historical societies about built-environment resources. Dr. Nixon identified Gregory Mountain, located approximately 2,400 feet south of the project site, as a significant traditional cultural property for the Pala Band of Mission Indians (OGE2008a, p. 6.7-25).

Staff also requested a list of Native Americans in the proposed project area from the NAHC. Letters from staff were sent to Native American groups and individuals on November 26, 2007, asking for information regarding Native American concerns in the proposed project area.

In response to staff's letter, Dr. Nixon, representing the Pala Band of Mission Indians, sent a letter stating that the tribe wanted to be informed as the project progressed or changes. Dr. Nixon also expressed concern regarding potential impacts to numerous previously reported, culturally significant resources located in the vicinity of the project. He specified that the Tribe has guidelines that they would like contractors to follow. Nixon stressed that the Tribe wants to be contacted before construction work begins so that they can ensure that appropriate monitors are in place in case there are inadvertent discoveries.

Staff telephoned Dr. Nixon on February 29, 2008 to acknowledge the letter from the Pala Band of Mission Indians and to explain that the Tribe could be become a formal intervenor on the project. Staff ensured that the Tribe was added to the general information list for the project and will receive notices regarding workshops and hearings.

The applicant contacted the NAHC again in September, 2008, to request a search of the sacred lands file for the area along the transmission line corridor. The NAHC responded on September 15, 2008, that no sacred lands fell within the transmission corridor.

Archaeological Field Survey

Pacific Legacy conducted pedestrian archaeological survey of the proposed project site and along the linear facilities during April and May 2007. Surveys at the site were conducted utilizing 5-meter transects. Soil visibility was variable, and in some cases was as low as 10% due to the dense, non-native grasses. Pedestrian surveys of the linear facilities routes were conducted by walking 10-meter transects covering and exceeding the 50-foot buffer zone along the linear facilities routes. The westernmost 1,600 feet of the natural gas pipeline was not accessible at the time of these surveys and was subject to a windshield survey. In September, 2007, pedestrian survey on this portion of the pipeline was completed. The survey was conducted utilizing a 10-meter transect along a 100-foot-wide survey area along SR 76 (OGE2008a, App 6.7-B).

A September 2008 survey identified 14 previously recorded sites within the half-mile corridor of the transmission line from Pala Substation to Monserrate Substation that would be reconductored as a result of the proposed project.

Pacific Legacy conducted subsequent pedestrian surveys in February and May, 2008. Survey of the project linear facilities routes and staging areas was conducted on foot, along 15-foot transects or less. Coverage of steeper slope areas was accomplished in a systematic zigzag, and rock outcrops were inspected for rock art and milling sites. Pacific Legacy unsuccessfully attempted to re-identify previously recorded archaeological sites CA-SDI-13004, CA-SDI-13005, CA-SDI-13768, and CA-SDI-13769. The area had been considerably altered by bulldozing, circa 1994, to create terraces, and it is possible these sites were destroyed. Alternatively, the sites may have been erosion features incorrectly identified as cultural features, or the site record location plots did not provide the precision required to relocate these sites. Site CA-SDI-13766 was re-identified, and the archaeologists observed no changes to the site description or condition. In May, 2008, Jessica Auck of Urbana performed an archaeological survey of the planned fresh-water pick-up station, but did not identify any cultural resources that had not been previously recorded (OGE2008a, App. 6.7-B; OGE2008b, pp. 7-8).

Pacific Legacy also conducted a pedestrian survey of approximately eight miles, between Monserrate and Pala Substations, of transmission line corridor that would be reconductored as a result of the OGP. The archaeological survey encompassed the 44 specific pole laydown locations where ground-disturbing activities would take place, 18 temporary stringing sites, and three temporary laydown sites. At each pole site, an area within a 100-foot radius of the pole location was surveyed. One pole site was inaccessible. The entire area of each stringing site and laydown site plus a 50-foot buffer area was surveyed (OGE2008f, p. 0).

Built-Environment Field Survey

Windy Tinsley of Urbana conducted the built-environment survey in September, 2007. The survey was inclusive of the project site and the project linear facility routes. Two resources were identified as of sufficient age to be considered potentially significant cultural resources: the citrus orchard on the proposed project site (a 1940s-era landscape element) and the San Diego Aqueduct (Urbana 2008, pp. 1-2).

Geoarchaeological Field Investigation

Geoarchaeology is a subfield of archaeology that uses the concepts and methods of the earth sciences to conduct archaeological research. The broader goal of geoarchaeology is to firmly establish the most basic elements of archaeological interpretation, which are the physical contexts of archaeological sites and the human material residues that are a part of them. Geoarchaeology provides information on the structure, the origin, and the development of archaeological deposits. Geoarchaeological research typically draw on a suite of concepts and methods from geomorphology (the study of landform development and history), stratigraphy (the study of the character and age of sequences of geologic deposits), pedology (the study of soils and soil development), and sedimentology (the study of the composition, character, and age of geologic sediments). Geoarchaeological research is essential to the analysis of the potential impacts of a proposed project on buried archaeological deposits, where a proposed project involves deep (greater than one meter) ground disturbance, because it provides a factual assessment of the likelihood that such deposits may be present in a project area and establishes the likely character of any such deposits.

As the construction of the OGP will involve deep ground disturbance on the project site and along the alignment of the natural gas pipeline, staff developed Data Request 46 in consultation with Pacific Legacy, OGE's cultural resources consultant, to provide data on the potential presence of buried archaeological resources in the proposed project's impact areas.

In its August 29, 2008, response to staff's request, OGE provided information about the age and character of the three landforms that were identified in the project area. The applicant eliminated, as unlikely to contain subsurface archaeological deposits, the ancient alluvial fan that would host the project site and the upland igneous bedrock terrain adjacent to and west of the alluvial fan. Staff agreed with the elimination of those two landforms from further consideration. The applicant described the remaining landform, the floodplain, as including both the active floodplain of the San Luis Rey River and a relatively shallow series of alluvial terraces that represent remnant floodplains, adjacent to the active floodplain. The applicant characterized these portions of the project area as being a "geomorphic setting in which buried archaeological resources could be found" (TRC2008n, p. 12) and in the Cumulative Impacts section of the AFC as having the greatest potential for unknown archaeological resources (OGE2008a, p. 6.7-33).

The applicant's response additionally cited the logs for four borings that are clustered along one 1,100-foot stretch of the approximately 9,200-foot length of the natural gas pipeline alignment that traverses the San Luis Rey River floodplain. The response characterized the subsurface sediments as being "primarily sand, indicative of channel deposits."

At the September 11, 2008 Data Response and Issue Resolution Workshop, staff sought to clarify that the applicant's response to Data Request No. 46, which was a broadly applicable discussion of geologic process, did not provide data sufficiently specific to inform staff's assessment of the project's potential effects. Staff needed to know how, specifically, the geologic processes of stream deposition unfolded in the project area, in time increments of hundreds of years, and whether the unique, historic

geologic events in the project area led to the local preservation of archaeological deposits at depths greater than one meter.

Subsequent to the workshop, OGE made additional efforts to obtain and provide to staff data relevant to the potential of the natural gas pipeline route to contain buried archaeological deposits.

On September 29, 2008, OGP Project Director and geologist Joseph L. Stenger held a telephone conversation with Mr. Marvin Howell, Director of Land Use Planning and Permitting for Hanson Aggregates (TRC2008k). Mr. Howell had formerly been involved, from 1986 until the mine closed in 2006, with the Fenton Sand Mine, located south of SR 76 near the OGP. The applicant contacted Mr. Howell as a person familiar with the Fenton Sand Mine's Holocene alluvium deposits, which the applicant considers representative of the Holocene alluvium in which the OGP proposes to excavate a trench for its natural gas pipeline.

Mr. Stenger asked Mr. Howell whether he was knowledgeable regarding operations at the former sand mine. Mr. Howell indicated that that he was very familiar with the operations that occurred there and described the sand that was quarried there as channel deposits with less than 10% gravel. When asked whether he knew if any buried cultural resources were ever found during excavations conducted at the mine, Mr. Howell stated that to his knowledge no cultural resources were encountered. Mr. Howell added that if cultural resources would have been found at the mine, he would know about it.

Mr. Stenger also conducted a field reconnaissance of accessible areas of the floodplain and the terraces along the San Luis Rey River near the project area to determine if there were any extant natural or artificial exposures of the upper portion of these alluvial deposits. One exposure was found in what Mr. Stenger describes as an erosion feature, and on October 1, 2008, observations were made at that location. The exposure was shovel-scraped, a measuring tape was draped down the vertical face of the exposure, and digital images of the exposure were made in approximately six-inch increments down the face of the exposure to a total depth of approximately six feet. The applicant observed that the exposure did not contain major fine-grain beds that would be indicative of overbank deposits nor were paleosols apparent. The sedimentary deposits in the exposure did not appear to contain organic matter of sufficient quantity to permit radiocarbon assays of the deposits, nor was evidence of material culture apparent (OGE2008g).

On October 16, 2008, TRC Solutions, Inc. (TRC) conducted an additional geoarchaeological investigation (TRC2008m). TRC archaeologist Tracy Stropes and TRC geologist John Nordenstam completed and evaluated four geotechnical borings within the State Route 76 (SR 76) right-of-way along the proposed OGP natural gas pipeline route. The borings were located near the west end of the gas pipeline route near the intersection of Couser Canyon Road and SR 76. The four borings were each completed to a depth of 20 feet below the ground. Prior to conducting field work, available geologic, geomorphic, and cultural resource information for the area was reviewed to facilitate understanding the local stratigraphy and other relevant conditions.

Both cuttings and sediment core samples were observed and characterized during drilling to provide continuous logging for all four borings. Geologic characteristics were recorded and documented in boring logs. Core samples were taken in each hole at intervals ranging from 1 to 3.5 feet. Drill cuttings were continuously sampled and logged from all four borings and sifted through ¼-inch screen to monitor for the potential presence of cultural materials. Cuttings and samples were observed for the potential presence of paleosol horizons, cultural horizons, or cultural matrices.

As a result of this field work, no cultural materials, cultural horizons, paleosols, or any other condition indicating the potential presence of cultural resources were observed. The materials encountered were primarily fine to course sand, with some sandy silt and silt with sand, interpreted as Holocene alluvium deposited by the San Luis Rey River. The applicant concluded that these materials have a low likelihood of containing significant cultural resources.

Results: Archaeological Resources

The presence of five previously recorded archaeological sites or isolates that might be impacted by ground disturbance at the proposed project site could not be reconfirmed by field surveys. However, caution is warranted during because there may be subsurface components to some of these sites.

Twelve additional archaeological sites were previously recorded in the vicinity of the gas line route. Although the applicant has stated that no sites appear to be present within 50 feet of the proposed trench, again caution is warranted because subsurface components of sites may extend into areas of pipeline excavation.

Cultural Resources Table 2
Previously Recorded Archeological Sites and Isolates within the Potential Impact Area of the Proposed Project Site and Proposed Gas Line Route

Resource Designation	Resource Type	Significance	On or Near Project Component
CA-SDI-683	Prehistoric, Protohistoric, and Historic multi-component Site	Not formally evaluated	Monitoring required
CA-SDI-744A, B1, B2, updated and now is known as CA-SDI-744	Prehistoric habitation site with midden, bedrock exposures and mortars.	Not formally evaluated	Monitoring required
CA-SDI-786	Prehistoric Pauma complex site	Not formally evaluated	Project will avoid
CA-SDI-12584	Prehistoric Ceremonial site	Presumed significant	Monitoring required
CA-SDI-12585	Milling sites with an artifact scatter	Not formally evaluated	Monitoring required
CA-SDI-13004	Single Milling Slick	Not formally evaluated	Monitoring required
CA-SDI-13006	Scatter of Prehistoric Ceramic Sherds	Not formally evaluated	Monitoring required
CA-SDI-13005	Isolated Bedrock Mortar	Not formally evaluated	Project will avoid
CA-SDI-13007	Scatter of Prehistoric and Historic Ceramic Sherds	Not formally evaluated	Monitoring required
CA-SDI-13766	Scatter of historic ceramic sherds; domestic refuse; glass fragments	Not formally evaluated	Monitoring required
CA-SDI-13768	Single Milling Slick	Not formally evaluated	Monitoring required
CA-SDI-13769	Single Milling Slick	Not formally evaluated	Monitoring required
CA-SDI-14609	Prehistoric pictograph site	Presumed significant	Monitoring required

Cultural Resources Table 3
Previously Indentified Sites, Isolates, and Built-Environment Resources within the Potential Impact Area of the FPUD Facility (TRC2008n, Figures 1a, 1b)

Resource Designation	Resource Type	Significance	On or Near Project Component
CA-SDI-14005H	California Southern Railroad	Not formally evaluated	Project will avoid
CA-SDI-14382	Bedrock Milling Complex	Presumed significant	Monitoring required
CA-SDI-14383	Bedrock Milling Feature	Presumed significant	Monitoring required
CA-SDI-14384	Bedrock Milling Feature	Presumed significant	Monitoring required

Table 4 below addresses sites and isolates that were identified in the potential impact area of the transmission line that would be reconductored as a result of this project.

Cultural Resources Table 4
Previously Identified Sites, Isolates, and Built Environment Resources Within the Area of Potential Impacts of the Transmission Line to be Reconductored as a Result of the OGP (OGE2008e, p.7)

Resource Designation	Resource Type	Significance	On or Near Project Component
CA-SDI-744A, B1, B2, updated and now is known as CA-SDI-744	Prehistoric habitation site with midden, bedrock exposures and mortars.	Not formally evaluated	Yes
CA-SDI-773	Bedrock mortar	Not formally evaluated	Yes
CA-SDI-786	Prehistoric Pauma complex site	Not formally evaluated	Yes
CA-SDI-4356	Pictographs associated with bedrock mortar	Not formally evaluated	Yes
CA-SDI-4910	Pictographs with associated milling sites	Presumed significant	Yes
CA-SDI-12582	Bedrock mortar	Not formally evaluated	Yes
CA-SDI-12584	Milling slick, yoni, cupules, handstone	Not formally evaluated	Yes
CA-SDI-12585	Milling sites with an artifact scatter	Not formally evaluated	Yes
CA-SDI-13006	Scatter of Prehistoric Ceramic Sherds	Not formally evaluated	Yes
CA-SDI-13007	Scatter of Prehistoric and Historic Ceramic Sherds	Not formally evaluated	Yes
CA-SDI-13607	Single Milling Slick	Not formally evaluated	Yes
CA-SDI-13610	Single Milling Slick	Not formally evaluated	Yes
CA-SDI-14611	Maggie Lovell house site	Not formally evaluated	Yes
CA-SDI-13767	Bedrock milling slick	Not formally evaluated	Yes

Summary

There are a total of 13 archaeological sites or isolates that were previously identified on or near the proposed project site and proposed natural gas line route. Several of the identified sites would be avoided by the proposed project ground disturbance, and staff has recommended appropriate monitoring for 11 others.

In the vicinity of the FPUD, three archaeological sites or isolates and one built-environment resource have been identified within the potential impact area. Staff recommends monitoring of ground disturbance in the vicinity of the archaeological resources. The built-environment resource would be avoided.

The September 2008 survey identified and relocated 17 previously known sites within the half-mile corridor of the transmission line from Pala Substation to Monserrate Substation. Since the reconductoring activities will be permitted by another agency, it is not appropriate for staff to require mitigation for potential impacts. However, staff would recommend monitoring in the vicinity of cultural resources that might be impacted by reconductoring efforts.

Results: Built-Environment Resources

The first of the two resources identified within the built-environment area of analysis is the San Diego Aqueduct (SDA). The SDA is comprised of two separate aqueducts, identified as the first and second aqueducts. The first aqueduct consists of two pipelines constructed of pre-cast concrete designed to withstand a carrying capacity of 196 cubic feet of water per second. It runs 70 miles from the Colorado Aqueduct at San Jacinto, California, to the City of San Diego's Vicente Reservoir, located approximately 15 miles north of the city. The second aqueduct is approximately 94 miles long and designed to carry 144–500 cubic feet of water per second. It consists of two pipelines which run from Hemet, California, to the Lower Otay Reservoir in San Diego and the Alvarado Treatment Plant in La Mesa, California. The two aqueducts are subsurface with the exception of two pressure-relief values located in Fallbrook, near old Highway 395 and Reche Road.

The SDA played an important role in the growth of the San Diego region. During World War II, for the first time, San Diego achieved a large population because of the large military presence there, with concomitant commercial growth. In the immediate post-war era the city experienced rapid suburbanization due to the Serviceman's Readjustment Act. Until the completion of the SDA, San Diego was completely dependent on local, limited sources of water. With the first delivery of water from the SDA and its connection to the Colorado River, San Diego sufficiently addressed water shortage as a barrier to its future growth.

The second resource evaluated by Urbana, OGE's built-environment consultant, was the 1940s-era citrus orchard located at the project site. The small group of citrus trees is a landscape element and a potential historic site. It appears to have been cultivated in the late 1940s. Research conducted by Urbana indicated that the orchard on the project site was the southwestern corner of a larger orchard, located on the west side of Pala Road, which contained approximately 39 rows of trees. Because the orchard does not represent a large agricultural operation that is significant within the context of agriculture in the Pala area, Urbana believes it does not appear to be eligible for listing in the CRHR. Staff agrees with the conclusion that the orchard was indeed more typical of small-scale agricultural operations in the Pala vicinity in the later part of the 1940s and in the 1950s and does not represent a significant trend within the area.

Urbana recommended the SDA as eligible for inclusion in the CRHR for its important association with the legal and political theme of water rights in California, in particular

for the Southern California region (Criterion 1, associated with events that have made a significant contribution to the broad patterns of our history). Urbana also recommended the SDA as CRHR eligible as an example of an engineered water conveyance system, designed and built by the U.S.Bureau of Reclamation (USBR) and the U.S. Navy (USN) (Criterion 3, embodying the distinctive characteristics of a type, period, or method of construction) (Urbana 2008).

Water conveyance systems, with their dams, aqueducts, and regulating reservoirs, are potentially significant under Criterion 1 if they are importantly associated with trends and/or events in transportation development or regional or local economic development. Establishing significance, though, should be done with certain principles in mind. These systems, like other infrastructure, are inherently important to their communities as they substantially affect the ability of communities to grow and prosper. That in turn affects development on both the local and regional levels. This effect in itself does not typically provide sufficient evidence to demonstrate how some infrastructure may be deemed significant for its association with an important historic context; otherwise virtually any aqueduct or dam, with associated structures would be shown to be important in this way.

To be eligible for listing in the CRHR, resource types such as water conveyances, structures, and other infrastructure must have demonstrable importance directly related to important historic events and trends, with emphasis given to specific demand for such infrastructure, and its effects on social, economic, commercial, and industrial developments locally, regionally, or nationally. In this way, these resources may be significant as physical manifestations of broad patterns in our history on the local, regional, state, or national level. The SDA does have demonstrable importance directly related to providing adequate water supply to the military in San Diego during World War II and for supporting the growth and suburbanization of the region after the war.

Staff believes the SDA is eligible under Criterion 1 at the local level of significance for its important association generally with a broad pattern of California history, the rapid suburbanization and the urgent demand to construct infrastructure to support suburbanization. In particular, the need to quickly supply water to the growing metropolitan areas of Southern California compounded the need to construct water conveyance systems such as the SDA. Thus, staff is in agreement with Urbana that the SDA is individually eligible for the CRHR, but also believes the SDA is eligible as a contributor to the larger San Diego Project, a potential historic district. Evaluation of the SDA in its entirety is not warranted at this time to fully assess the significance of the portions of the SDA that fall within the built-environment area of analysis.

In addition to Criterion 1, Urbana recommended the SDA is eligible under Criterion 3, as a significant example of engineered water conveyance system designed and constructed by the USBR and the USN. Staff disagrees with this assessment and believes the SDA is not eligible for inclusion as it does not represent a significant example of engineering or a significant example of a type. Even though the SDA is not eligible under Criterion 3, it is eligible under Criterion 1 and therefore is still considered a historical resource.

Results: Ethnographic Resources

One ethnographic resource, Gregory Mountain, is located approximately 2,400 feet from the project site. Gregory Mountain is currently being nominated to the National Register of Historic Places (NRHP) as a traditional cultural property, recognized by the Luiseño people. A revised version of the NRHP nomination is being forwarded to the Keeper for inclusion in the NRHP (Ambacher 2008). Eligible under Criteria A (CRHR Criterion 1) for its significance as a source of spiritual power, Gregory Mountain plays a key role in the Luiseno religion. The traditional spirit world of the Luiseno is centered on *Wiyot*, his children, the *Kahmekkum*, and Wiyot's death. The Luiseño believe that most of the Kahmekkum are no longer present on earth, but they have the ability to bestow *ayelkwi* or knowledge or power on people who seek it and often manifest themselves as lightening, thunder, or wind, or as spiritual rocks or mountains. *Taakwic* is the most powerful or feared of the original people, and one of his residences is Gregory Mountain. His main home is Lily Rock, a large granite outcropping north of Tahquitz Peak in the San Jacinto Mountains, but he is known to have several additional residences like Gregory Mountain. Taakwic is revered as the first shaman, the spiritual guardian and mentor to shamans, but also is a fearful figure known to be responsible for death and disaster (Baksh 2007, section 7).

Gregory Mountain is also known by the contemporary Luiseño as Taakwic Mountain or *Chokl*a. It was first documented in John P. Harrington's ethnographic history of the Luiseño, based on his fieldwork among the Luiseño between 1932 and 1934. More supporting data on the religious significance of the mountain comes from interviews with Luiseño descendents, completed for the proposed Gregory Landfill Project EIR. These interviews establish the direct connection between the mountain and a living traditional belief, as required by the NRHP. The second prerequisite required by the NRHP is that the resource maintains sufficient integrity to convey its significance. In the case of Traditional Cultural Properties (TCPs), two fundamental questions arise in relation to integrity. First, the property must have an integral relationship to the traditional cultural practice or belief, and, second, the condition of the resource must be such that the relationship survives. Gregory Mountain maintains both a relationship to Luiseño belief and its intact condition, despite continued development in the area (Baksh, 2007, section 8). Because Gregory Mountain is eligible for the NRHP, it is automatically listed in the CRHR.

Summary of Potentially CRHR-Eligible Cultural Resources the Proposed Project Could Impact

Sixteen potentially CRHR-eligible resources were identified in the several areas of analysis for the OGP. Fourteen of these resources are previously known archaeological sites located on or adjacent to proposed OGP components whose construction could impact them. While the CRHR eligibility of these 14 resources was not evaluated by the recorders, staff assumes they are potential historical resources.

Additionally, the OGP could potentially impact an ethnographic resource, Gregory Mountain and a portion of the built-environment resource, SDA, so the project's potential impacts to these two historical resources need to be assessed.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANT IMPACTS

Under CEQA, a project that may adversely change the significance of a historical resource may have a significant effect on the environment (Pub. Resources Code § 21084.1). The Energy Commission must therefore evaluate the potential significance of the cultural resources identified as subject to impacts from a project. The Energy Commission evaluates the significance of cultural resources by determining whether they meet several sets of specified criteria, set forth in state laws (below). Only a project's potential impacts to cultural resources evaluated as potentially significant must be assessed as having a significant effect on the environment for which mitigation may be required.

The CEQA Guidelines provide a definition of a historical resource as a "resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the CRHR", or "a resource listed in a local register of historical resources or identified as significant in a historical resources survey meeting the requirements of section 5024.1 (g) of the Public Resources Code," or "any object , building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the agency's determination is supported by substantial evidence in light of the whole record." (Cal. Code Regs., tit. 14, § 15064.5(a)). Historical resources that are automatically listed in the CRHR include California historical resources listed in or formally determined eligible for the NRHP and California Registered Historical Landmarks from No. 770 onward (Pub. Resources Code, § 5024.1(d)).

Under the CEQA Guidelines, a resource is generally considered to be historically significant if it meets the criteria for listing in the CRHR. These criteria are essentially the same as the eligibility criteria for the NRHP. In addition to being at least 50 years old,[2] a resource must meet at least one (and may meet more than one) of the following four criteria (Pub. Resources Code § 5024.1):

- Criterion 1, is associated with events that have made a significant contribution to the broad patterns of our history;
- Criterion 2, is associated with the lives of persons significant in our past;
- Criterion 3, embodies the distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values; or
- Criterion 4, has yielded, or may be likely to yield, information important to history or prehistory.

In addition, historical resources must also possess integrity of location, design, setting, materials, workmanship, feeling, and association (Cal. Code Regs., tit. 14, § 4852(c)).

[2] The Office of Historic Preservation's *Instructions for Recording Historical Resources* (1995) endorses recording and evaluating resources over 45 years of age to accommodate a five-year lag in the planning process.

Even if a resource is not listed or determined to be eligible for listing in the CRHR, CEQA allows the lead agency to make a determination as to whether the resource is a historical resource as defined in Public Resources Code, section 5020.1(j) or section 5024.1. Whether a proposed project would cause a substantial adverse change in the significance of historical resources is the issue that staff analyzes to determine if the project may have a significant effect on the environment. The significance of an impact depends on:

- The cultural resource impacted;
- The nature of the resource's historical significance;
- How the resource's historical significance is manifested physically and perceptually;
- Appraisals of those aspects of the resource's integrity that figure importantly in the manifestation of the resource's historical significance; and
- How much the impact would change those integrity appraisals.

DIRECT/INDIRECT IMPACTS AND MITIGATION

In the abstract, direct impacts to cultural resources are those associated with project development, construction, and co-existence. Construction usually entails surface and subsurface disturbance of the ground, and direct impacts to archaeological resources may result from the immediate disturbance of the deposits, whether from vegetation removal, vehicle travel over the surface, earth-moving activities, excavation, or demolition of overlying structures. Construction can have direct impacts on historic standing structures when those structures must be removed to make way for new structures or when the vibrations of construction impair the stability of historic structures nearby. New structures can have direct impacts on historic structures when the new structures are stylistically incompatible with their neighbors and the setting, and when the new structures produce something harmful to the materials or structural integrity of the historic structures, such as emissions or vibrations.

Generally speaking, indirect impacts to archaeological resources are those which may result from changed circumstances that result from project activities, such as increased erosion due to site clearance and preparation, or inadvertent damage or outright vandalism to exposed cultural resources due to improved accessibility. Similarly, historic structures can suffer indirect impacts when project construction causes obsolescence and demolition or creates improved accessibility with consequent vandalism and/or greater weather exposure.

Ground disturbance accompanying construction at a proposed plant site, along proposed linear facilities, and at a proposed lay down area has the potential to directly impact archaeological resources, unidentified at this time. The potential direct, physical impacts of the proposed construction on unknown archaeological resources are commensurate with the extent of ground disturbance entailed in the particular mode of construction. This varies with each component of the proposed project. Placing the proposed plant into this particular setting could have a direct impact on the integrity of association, setting, and feeling of nearby standing historic structures.

Construction Impacts and Mitigation

Mitigation for Direct and Indirect Impacts on Significant Resources: Identification and Assessment

The proposed OGP construction activities involve grading with a maximum cut of 20 feet to provide pads for project facilities, clearing of agricultural vegetation, hauling and lay down of equipment, materials and supplies, and facility construction on the plant site, at the fresh-water pick-up station, and along the natural gas pipeline route. The gas line would require open trenching to a depth of approximately three feet (OGE2008a, p. 6.7-32). This ground disturbance could impact subsurface extensions of the 14 previously known, potentially CRHR-eligible archaeological sites located on or adjacent to the plant site, the fresh-water pick-up station, and the gas line. Consequently, staff recommends archaeological monitoring of construction-related ground disturbance on the project components near these 14 resources.

Additionally, the OGP could potentially impact two other resources, Gregory Mountain and a portion of the SDA. OGE determined that the pipe depths of the SDA, a built-environment resource, were 12.40 and 12.35 feet below the surface (TRC2008f, Data Response 45), so the proposed gas pipeline would not directly impact the SDA. The project would also not significantly affect the integrity of the setting of Gregory Mountain, an ethnographic resource. A combination of modern industrial and commercial development in the vicinity has already altered the setting of the resource, and the addition of the proposed OGP would not further diminish the integrity of setting of Gregory Mountain to the level that would significantly impair it.

Thus, OGE and staff did not identify any direct or indirect construction impacts from the proposed OGP that would significantly impact through demolition, destruction, relocation, or alteration of the resource itself or of the setting of the potentially CRHR-eligible SDA or Gregory Mountain that appear to be CRHR eligible. Because the project would not have significant impacts, no mitigation would be required for known historical resources. Proposed conditions of certification listed below would provide for effects on as-yet-unidentified historical resources.

As discussed earlier, subsurface disturbance of the ground could have direct impacts on unidentified buried archaeological resources which could be significant under CRHR Criterion 4 (“likely to yield information important in history or prehistory”). The risk of direct, physical impacts from the proposed OGP construction on as-yet-unidentified archaeological resources is commensurate with the extent of ground disturbance entailed in the particular mode of construction. This varies with each component of the proposed project.

The applicant recognizes the possibility that intact prehistoric and historic-period archaeological deposits could be present in undisturbed native soils on the proposed OGP site (OGE2008a, p. 6.7-33–35), and staff agrees with this assessment. Because of the moderate probability that prehistoric and historic-period archaeological deposits could be encountered during construction (see Literature and Records Search section above), staff recommends that procedures for identifying, evaluating, and possibly mitigating impacts to newly discovered archaeological resources be put in place through conditions of certification to reduce those impacts to a less than significant level.

OGE has suggested a number of measures intended to mitigate potential impacts to archaeological resources that could be discovered during the construction of the proposed OGP, including the following:[3]

> Designated Cultural Resource Specialist. OGE would retain a designated Cultural Resource Specialist (CRS) who would be available during the entire construction period to evaluated any unanticipated discoveries. The CRS would meet the Secretary of the Interior's professional guidelines and would be responsible for preparing and presenting the Worker Education program, implementing construction monitoring, overseeing management of materials recovered during construction, and preparing the cultural resource management element of the project operation manual.
>
> Worker Education Training. OGE would design and implement a worker education program for all personnel who have the potential to encounter and alter archaeological sites, historical resources, or properties that may be eligible for the CRHR.
>
> Prepare and Implement a Construction Monitoring and Unanticipated Cultural Resources Discovery Plan. Prior to the initiation of any earth disturbance, OGE would prepare a construction monitoring plan and unanticipated cultural resources discovery plan with provisions for worker training, identification of workers with authorization to stop work, procedures for identifying and evaluating cultural resources, procedures for consulting Native Americans in the process of resource identification and evaluation, procedures for the treatment of human remains if encountered, and identification of a curation facility for materials that may be encountered during construction.
>
> Archaeological Monitoring. OGE would provide for archaeological monitoring of earth-disturbing activities, including clearing, grubbing, grading, and trenching at the site, along linear facilities, and at the water supply points. In the event that earth-disturbing activities are taking place simultaneously at distances more than 100 meters apart, an archaeological monitor would be provided at each location.
>
> Inadvertent Discovery of Human Remains. Any human remains discovered during OGP activities would be protected in accordance with current state law as detailed in Public Resources Code sections 5097.91 and 5097.98. These provisions for the discovery of human remains would be defined in the Construction Monitoring and Unanticipated Cultural Resources Discovery Plan. Archaeological excavations at sites would not, if at all possible, inappropriately disturb or remove human remains. Prior to construction, appropriate Native Americans would be consulted to develop a protocol to be followed if human remains are encountered during any OGP activity.

[3] The indented material below is adapted from OGE2008a, pp. 6.7-35–6.7-38.

Protection and Preservation of Remains. OGE would ensure that impacts to cultural resources related to the unanticipated discovery of human remains are treated in accordance with state law as detailed in Public Resources Code sections 5097.91 and 5097.98.

Avoidance of the San Diego Aqueduct. OGE would ensure that project design and construction would avoid the aqueduct.

Protection of Historical Resources During Project Operation, Maintenance, and Upgrade. OGE would include in its operation and maintenance manual provisions that would be followed when any ground-disturbing work would occur at the power plant or linear facilities.

OGE has provided information applicable to assessing the likelihood of the presence of buried archaeological deposits along the route of the natural gas pipeline, and has concluded that the likelihood of such deposits is low. Staff, however, believes that while this information is sufficient to evidence a consideration of the potential presence of buried archaeological deposits in the area of analysis, it is insufficient to mitigate the potential impact of construction excavation to such deposits to a level below significant. Staff further has more pertinent evidence, such as the presence of known prehistoric archaeological sites on the surface of landforms adjacent to and partially buried beneath the floor of the San Luis Rey River Valley, the known Native American use of riverine resources on the valley floor before and after European contact, and knowledge of the geoarchaeology of stream systems, in general, and of a downstream portion of the San Luis Rey River Valley floor, in particular, to justify the ongoing concern for the potential for buried archaeological deposits along the gas pipeline route.

Consequently, staff is proposing conditions of certification that incorporate OGE's suggested mitigation measures and add further provisions to ensure that all impacts to potentially CRHR-eligible cultural resources discovered during construction-related excavations are mitigated to below a significant level. One of staff's conditions would require having an archaeologist and, additionally recommends having, a Native American representative together monitor construction excavations at the project site, at the fresh-water pick-up station, and along the natural gas pipeline. Staff believes that the desire of the Pala Band of Mission Indians to be informed and involved during OGP construction should be respected. Another proposed condition of certification would require the applicant to conduct systematic screening of sediments in the natural gas pipeline trench during its excavation to more reliably monitor for the presence of cultural materials. The proposed monitoring condition requires less monitoring than OGE proposed, but staff believes less monitoring is warranted based on the geoarchaeological data OGE provided. Staff's other proposed conditions provide procedures for expertly identifying, evaluating, and possibly mitigating impacts to newly discovered archaeological resources and require the project owner to train workers to recognize cultural resources, to halt ground-disturbing activities in the area of an archaeological discovery, and to fund data recovery, if needed.

Operation Impacts and Mitigation

During operation of the proposed power plant, if a leak should develop in any buried project components, repair of the buried utility could require the excavation of a large

hole. Such repairs could impact previously unknown subsurface archaeological resources in areas unaffected by the original excavation. The measures proposed for mitigating impacts to previously unknown archaeological resources during the construction of the plant and linear facilities (proposed Conditions of Certification **CUL-1** through **CUL-7**) would also serve to mitigate impacts from repairs occurring during operation of the plant.

Cumulative Impacts and Mitigation

A cumulative impact refers to a proposed project's incremental effects, considered over time and together with those of other, nearby, past, present, and reasonably foreseeable future projects whose impacts may compound or increase the incremental effect of the proposed project (Pub. Resources Code, § 21083; Cal. Code Regs., tit. 14, §§ 15064(h), 15065(a)(3), 15130, and 15355).

Staff identified two additional projects within one mile of the proposed project site, the Gregory Landfill Project and the highway improvements along Highway 76 between I-15 and Rice Canyon Road. These projects must be considered as contributing to potential cumulative impacts on the cultural resources within this area. Cumulative impacts to cultural resources in the project vicinity could occur if impacts on cultural resources from the proposed OGP, when added to those of the other two projects would be cumulatively considerable.

Staff assumes that cultural resources studies would have been completed for these two projects as part of the local lead agency's CEQA review. Consequently, staff assumes that these studies identified CRHR-eligible cultural resources and potential project impacts to these cultural resources, and that any impacts have either been avoided or mitigated to a less-than-significant level. Staff, however, has not reviewed the cultural resources studies for these two projects.

This Staff Assessment has identified cultural resources near the proposed project site, assessed potential project impacts to these cultural resources, and determined that construction of the proposed OGP would not result in any significant impacts to known cultural resources. Additionally, the construction of this project would not contribute to any significant impacts to either the San Diego Aqueduct or Gregory Mountain, as it would not alter any of the characteristics which convey the significance of these resources. Staff has also proposed conditions of certification to mitigate any significant impacts to CRHR-eligible archaeological resources discovered during OGP-related ground disturbance. Proponents of future projects in the vicinity of the project can mitigate impacts to as yet undiscovered CRHR-eligible subsurface archaeological resources to less-than-significant levels by requiring archaeological monitoring of ground disturbance, evaluation of resources discovered during monitoring, and avoidance or data recovery. Impacts to human remains can be mitigated by following the protocols established by state law in Public Resources Code section 5097.98.

Since any impacts from the proposed project to CRHR-eligible cultural resources discovered during project-related ground disturbance would be mitigated to a less-than-significant level by the project's compliance with Conditions of Certification **CUL-1** through **CUL-7**, and since similar protocols can be applied to other current and future

projects in the area, staff does not expect any incremental effects of the proposed OGP to be cumulatively considerable, when viewed in conjunction with other projects.

COMPLIANCE WITH LORS

If the conditions of certification (below) are properly implemented, the proposed OGP project would result in a less-than-significant impact on known cultural resources and on any new archaeological resources discovered during construction. The proposed OGP would therefore be in compliance with the applicable state laws, ordinances, regulations, and standards listed in Table 1. Similarly, the project would be in compliance with the County of San Diego's General Plan, which requires CEQA review of project impacts to cultural resources within the county, and in compliance with San Diego Municipal Code requiring consideration of resources of historical value.

CONCLUSIONS AND RECOMMENDATIONS

Staff's cultural resources analysis has determined that the proposed OGP would have no impact on known significant archaeological resources, historic standing structures, ethnographic resources, historic districts, or cultural landscapes. With the adoption of cultural resources Conditions of Certification **CUL-1** through **CUL-7**, the OGP would have no significant impact on as-yet-unidentified buried archaeological deposits.

These conditions are intended to provide for the identification and assessment of any buried archaeological resources discovered during project-related excavations, and for the mitigation of any significant impacts from the project on any newly identified resources assessed as CRHR eligible. To accomplish this, the conditions provide for the hiring of a Cultural Resources Specialist and archaeological monitors to carry out monitoring of ground-disturbing activities and for cultural resources awareness training for construction workers. The other conditions provide for the recovery of data from CRHR-eligible discovered archaeological deposits, for the writing of a technical archaeological report on all archaeological activities and results, and for the curation of recovered artifacts and other data. When properly implemented and enforced, these conditions of certification would reduce to less than significant any impacts to cultural resources during the project's construction or operation. Additionally, with the adoption and implementation of these conditions, the project would be in conformity with all applicable laws, ordinances, regulations, and standards (LORS).

Consequently, staff recommends that the Commission adopt **CUL-1** through **CUL-7**.

PROPOSED CONDITIONS OF CERTIFICATION

CUL-1 Prior to the start of ground disturbance (includes "preconstruction site mobilization"; "construction ground disturbance"; and "construction grading, boring, and trenching," as defined in the General Conditions for this project), the project owner shall obtain the services of a Cultural Resources Specialist (CRS), and one or more alternate CRSs, if alternates are needed. The CRS shall manage all monitoring, mitigation, curation and reporting activities required in accordance with the Conditions of Certification (Conditions). The

CRS may elect to obtain the services of Cultural Resources Monitors (CRMs) and other technical specialists, if needed, to assist in monitoring, mitigation, and curation activities. The project owner shall ensure that the CRS makes recommendations regarding the eligibility for listing in the California Register of Historical Resources (CRHR) of any cultural resources that are newly discovered or that may be affected in an unanticipated manner. No ground disturbance shall occur prior to CPM approval of the CRS and alternates, unless such activities are specifically approved by the CPM. Approval of a CRS may be denied or revoked for non-compliance on this or other projects.

CULTURAL RESOURCES SPECIALIST

The resumes for the CRS and alternate(s) shall include information demonstrating to the satisfaction of the CPM that their training and backgrounds conform to the U.S. Secretary of Interior's Professional Qualifications Standards, as published in Title 36, Code of Federal Regulations, part 61 (36 C.F.R., part 61). In addition, the CRS shall have the following qualifications:

1. The CRS's qualifications shall be appropriate to the needs of the project and shall include a background in anthropology, archaeology, history, architectural history, or a related field;

2. At least three years of archaeological or historical, as appropriate, resource mitigation and field experience in California; and

3. At least one year of experience in a decision-making capacity on cultural resources projects in California and the appropriate training and experience to knowledgably make recommendations regarding the significance of cultural resources.

The resumes of the CRS and alternate CRS shall include the names and telephone numbers of contacts familiar with the work of the CRS/alternate CRS on referenced projects and demonstrate to the satisfaction of the CPM that the CRS/alternate CRS has the appropriate training and experience to implement effectively the Conditions.

CULTURAL RESOURCES MONITORS

CRMs shall have the following qualifications:

1. A B.S. or B.A. degree in anthropology, archaeology, historical archaeology or a related field and one year experience monitoring in California; or

2. An AS or AA degree in anthropology, archaeology, historical archaeology or a related field, and four years experience monitoring in California; or

3. Enrollment in upper division classes pursuing a degree in the fields of anthropology, archaeology, historical archaeology or a related field, and two years of monitoring experience in California.

CULTURAL RESOURCES TECHNICAL SPECIALISTS

The resume(s) of any additional technical specialist(s), e.g., historical archaeologist, historian, architectural historian, and/or physical anthropologist, shall be submitted to the CPM for approval.

Verification:

1. At least 45 days prior to the start of ground disturbance, the project owner shall submit the resume for the CRS, and alternate(s) if desired, to the CPM for review and approval.

2. At least 10 days prior to a termination or release of the CRS, or within 10 days after the resignation of a CRS, the project owner shall submit the resume of the proposed new CRS to the CPM for review and approval. At the same time, the project owner shall also provide to the proposed new CRS the AFC and all cultural resources documents, field notes, photographs, and other cultural resources materials generated by the project. If there is no alternate CRS in place to conduct the duties of the CRS, a previously approved monitor may serve in place of a CRS so that construction may continue up to a maximum of three days without a CRS. If cultural resources are discovered then construction will remain halted until there is a CRS or alternate CRS to make a recommendation regarding significance.

3. At least 20 days prior to ground disturbance, the CRS shall provide a letter naming anticipated CRMs for the project and stating that the identified CRMs meet the minimum qualifications for cultural resource monitoring required by this Condition. If additional CRMs are obtained during the project, the CRS shall provide additional letters to the CPM identifying the CRMs and attesting to the qualifications of the CRMs, at least five days prior to the CRMs beginning on-site duties.

4. At least 10 days prior to any technical specialists beginning tasks, the resume(s) of the specialists shall be provided to the CPM for review and approval.

5. At least 10 days prior to the start of ground disturbance, the project owner shall confirm in writing to the CPM that the approved CRS will be available for onsite work and is prepared to implement the cultural resources conditions.

CUL-2 Prior to the start of ground disturbance, if the CRS has not previously worked on the project, the project owner shall provide the CRS with copies of the AFC, data responses, and confidential cultural resources reports for the project. The project owner shall also provide the CRS and the CPM with maps and drawings showing the footprints of the power plant, all linear facilities, all access roads, and all laydown areas. Maps shall include the appropriate USGS quadrangles and a map at an appropriate scale (e.g., 1:2000 or 1” = 200’) for plotting cultural features or materials. If the CRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the CRS and CPM. The CPM shall review submittals and, in consultation with the CRS, approve those that are appropriate for use in cultural resources planning activities. No ground disturbance shall occur prior to CPM approval of maps and drawings, unless such activities are specifically approved by the CPM.

If construction of the project would proceed in phases, maps and drawings not previously provided shall be submitted prior to the start of each phase. Written notification identifying the proposed schedule of each project phase shall be provided to the CRS and CPM.

At a minimum, the CRS shall consult weekly with the project construction manager to confirm area(s) to be worked during the next week, until ground disturbance is completed.

The project owner shall notify the CRS and CPM of any changes to the scheduling of the construction phases.

Verification:

1. At least 40 days prior to the start of ground disturbance, the project owner shall provide the AFC, data responses, and confidential cultural resources documents to the CRS, if needed, and the subject maps and drawings to the CRS and CPM. The CPM will review submittals in consultation with the CRS and approve maps and drawings suitable for cultural resources planning activities.

2. If there are changes to any project-related footprint, revised maps and drawings shall be provided at least 15 days prior to start of ground disturbance for those changes.

3. If project construction is phased, if not previously provided, the project owner shall submit the subject maps and drawings 15 days prior to each phase.

4. On a weekly basis during ground disturbance, a current schedule of anticipated project activity shall be provided to the CRS and CPM by letter, e-mail, or fax.

5. Within five days of identifying changes, the project owner shall provide written notice of any changes to scheduling of construction phase.

CUL-3 Prior to the start of ground disturbance, the project owner shall submit the Cultural Resources Monitoring and Mitigation Plan (CRMMP), as prepared by or under the direction of the CRS, to the CPM for review and approval. The CRMMP shall be provided in the Archaeological Resource Management Report (ARMR) format, and, per ARMR guidelines, the author's name shall appear on the title page of the CRMMP. The CRMMP shall identify general and specific measures to minimize potential impacts to sensitive cultural resources. Implementation of the CRMMP shall be the responsibility of the CRS and the project owner. Copies of the CRMMP shall reside with the CRS, alternate CRS, each CRM, and the project owner's on-site construction manager. No ground disturbance shall occur prior to CPM approval of the CRMMP, unless such activities are specifically approved by the CPM.

The CRMMP shall include, but not be limited to, the following elements and measures:

1. A proposed general research design that includes a discussion of archaeological research questions and testable hypotheses specifically

applicable to the project area, and a discussion of artifact collection, retention/disposal, and curation policies as related to the research questions formulated in the research design. A prescriptive treatment plan may be included in the CRMMP for limited resource types. A refined research design will be prepared for any resource where data recovery is required.

2. The following statement included in the Introduction: "Any discussion, summary, or paraphrasing of the Conditions of Certification in this CRMMP is intended as general guidance and as an aid to the user in understanding the conditions and their implementation. The conditions, as written in the Commission Decision, shall supersede any summarization, description, or interpretation of the conditions in the CRMMP. The Cultural Resources Conditions of Certification from the Commission Decision are contained in Appendix A."

3. Specification of the implementation sequence and the estimated time frames needed to accomplish all project-related tasks during the ground disturbance, construction, and post-construction analysis phases of the project.

4. Identification of the person(s) expected to perform each of the tasks, their responsibilities, and the reporting relationships between project construction management and the mitigation and monitoring team.

5. A description of the manner in which Native American observers or monitors will be included, the procedures to be used to select them, and their role and responsibilities.

6. A description of all impact-avoidance measures (such as flagging or fencing) to prohibit or otherwise restrict access to sensitive resource areas that are to be avoided during construction and/or operation, and identification of areas where these measures are to be implemented. The description shall address how these measures would be implemented prior to the start of construction and how long they would be needed to protect the resources from project-related effects.

7. A statement that all cultural resources encountered shall be recorded on Department of Parks and Recreation (DPR) 523 forms and mapped and photographed. In addition, all archaeological materials retained as a result of the archaeological investigations (survey, testing, data recovery) shall be curated in accordance with the California State Historical Resources Commission's *Guidelines for the Curation of Archaeological Collections*, into a retrievable storage collection in a public repository or museum.

8. A statement that the project owner will pay all curation fees for artifacts recovered and for related documentation produced during cultural resources investigations conducted for the project. The project owner

shall identify three possible curation facilities that could accept cultural resources materials resulting from project activities.

9. A statement that the CRS has access to equipment and supplies necessary for site mapping, photography, and recovery of any cultural resource materials that are encountered during ground disturbance and cannot be treated prescriptively.

10. A description of the contents and format of the Cultural Resource Report (CRR), which shall be prepared according to ARMR guidelines.

Verification:

1. At least 30 days prior to the start of ground disturbance, the project owner shall submit the subject CRMMP to the CPM for review and approval.

2. At least 30 days prior to the start of ground disturbance, a letter shall be provided to the CPM indicating that the project owner agrees to pay curation fees for any materials collected as a result of the archaeological investigations (survey, testing, data recovery).

CUL-4 The project owner shall submit the Cultural Resources Report (CRR) to the CPM for approval. The CRR shall be written by or under the direction of the CRS and shall be provided in the ARMR format. The CRR shall report on all field activities including dates, times and locations, findings, samplings, and analyses. All survey reports, DPR 523 forms, and additional research reports not previously submitted to the California Historical Resource Information System (CHRIS) and the State Historic Preservation Officer (SHPO) shall be included as an appendix to the CRR.

If the project owner requests a suspension of construction activities, then a draft CRR that covers all cultural resources activities associated with the project shall be prepared by the CRS and submitted to the CPM for review and approval on the same day as the suspension/extension request. The draft CRR shall be retained at the project site in a secure facility until construction resumes or the project is withdrawn. If the project is withdrawn, then a final CRR shall be submitted to the CPM for review and approval at the same time as the withdrawal request.

Verification:

1. Within 90 days after completion of ground disturbance (including landscaping), the project owner shall submit the CRR to the CPM for review and approval. If any reports have previously been sent to the CHRIS, then receipt letters from the CHRIS or other verification of receipt shall be included in an appendix.

2. Within 90 days after completion of ground disturbance (including landscaping), the project owner shall provide to the CPM a copy of an agreement with, or other written commitment from, a curation facility that meets the standards stated in the California State Historical Resources Commission's *Guidelines for the Curation of*

Archaeological Collections, to accept cultural materials, if any, from this project. Any agreements concerning curation will be retained and available for audit for the life of the project.

3. Within 10 days after CPM approval, the project owner shall provide documentation to the CPM confirming that copies of the CRR have been provided to the SHPO, the CHRIS, and the curating institution, if archaeological materials were collected.

4. Within 30 days after requesting a suspension of construction activities, the project owner shall submit a draft CRR to the CPM for review and approval.

CUL-5 Prior to and for the duration of ground disturbance, the project owner shall provide Worker Environmental Awareness Program (WEAP) training to all new workers within their first week of employment at the project site, laydown area, and along the linear facilities routes. The training shall be prepared by the CRS, may be conducted by any member of the archaeological team, and may be presented in the form of a video. The CRS shall be available (by telephone or in person) to answer questions posed by employees. The training may be discontinued when ground disturbance is completed or suspended, but must be resumed when ground disturbance, such as landscaping, resumes. The training shall include:

1. A discussion of applicable laws and penalties under the law;

2. Samples or visuals of artifacts that might be found in the project vicinity;

3. Instruction that the CRS, alternate CRS, and CRMs have the authority to halt construction in the area of a discovery to an extent sufficient to ensure that the resource is protected from further impacts, as determined by the CRS;

4. Instruction that employees are to halt work on their own in the vicinity of a potential cultural resources discovery and shall contact their supervisor and the CRS or CRM, and that redirection of work would be determined by the construction supervisor and the CRS;

5. An informational brochure that identifies reporting procedures in the event of a discovery;

6. An acknowledgement form signed by each worker indicating that they have received the training; and

7. A sticker that shall be placed on hard hats indicating that environmental training has been completed.

No ground disturbance shall occur prior to implementation of the WEAP program, unless such activities are specifically approved by the CPM.

Verification:

1. At least 30 days prior to the beginning of ground disturbance, the CRS shall provide the training program draft text and graphics and the informational brochure to the CPM for review and approval, and the CPM will provide to the project owner a WEAP Training Acknowledgement form for each WEAP-trained worker to sign.

2. On a monthly basis, until ground disturbance is completed, the project owner shall provide in the Monthly Compliance Report (MCR) the WEAP Training Acknowledgement forms of workers at the project site and on the linear facilities who have completed the training in the prior month and a running total of all persons who have completed training to date.

CUL-6 The project owner shall ensure that the CRS, alternate CRS, or CRMs monitor full time all ground disturbance on the project site, at the fresh-water pick-up site, and along the natural gas pipeline route to ensure there are no impacts to undiscovered cultural resources and to ensure that known resources are not impacted in an unanticipated manner.

Additionally, the project owner shall ensure that the CRS, alternate CRS, or CRMs test a 20-centimeter-x-20-centimeter sediment column every 100 meters along the natural gas pipeline trench to assess whether buried archaeological deposits are present. The sediment column at each testing locale shall represent the complete complement of the sedimentary layers that the excavation of the pipeline trench cuts through. The project owner shall ensure that all of the sediments in each apparent natural or cultural layer of the column, to the bottom of the pipeline trench at each locale, are sifted separately through ⅛-inch mesh screen. Where discrete natural or cultural sedimentary layers are not apparent, where a proposed sediment column reveals what appears to be a single, massive depositional unit, the sediments in such a column shall be sifted, down the column in arbitrary layers no greater than 25 cm-thick. If cultural materials are identified, the project owner shall notify the CPM and obtain the services of a qualified geoarchaeologist (meets the U.S. Secretary of Interior's Professional Qualifications Standards for prehistoric archaeology and can demonstrate the completion of graduate-level coursework in geoarchaeology or Quaternary Science) to record a stratigraphic profile that captures the complete complement of the sedimentary layers that the excavation of the pipeline trench cuts through, including the strata above and below the identified cultural materials. In the absence of other locally viable chronometric techniques, the project owner shall ensure that soil humate samples from each such profile are submitted for radiocarbon assay to ascertain the approximate age of the sedimentary deposits in which found cultural materials are embedded. The results of this testing and any stratigraphic recordation done by the geoarchaeologist, as a component of the cultural resource monitoring for the construction of the project, shall be completely and thoroughly reported in the CRR required under **CUL-4**. The project owner shall further ensure that the geoarchaeologist and the CRS collaborate on the treatment of any discovery of cultural materials that result from this testing per the provisions of **CUL-7**.

Full-time archaeological monitoring for this project shall be the archaeological monitoring of all earth-removing activities on the construction site or along the linear facility routes for as long as the activities are ongoing. Full-time archaeological monitoring shall require at least one monitor per excavation area where machines are actively removing earth. If an excavation area is too large for one monitor to effectively observe the earth removal, one or more additional monitors shall be retained to observe the area.

In the event that the CRS believes that the current level of monitoring is not appropriate in certain locations, a letter or e-mail detailing the justification for changing the level of monitoring shall be provided to the CPM for review and approval prior to any change in the level of monitoring.

The research design in the CRMMP shall govern the collection, treatment, retention/disposal, and curation of any archaeological materials encountered.

On forms provided by the CPM, CRMs shall keep a daily log of any monitoring and other cultural resources activities and any instances of non-compliance with the Conditions and/or applicable LORS. Copies of the daily monitoring logs shall be provided by the CRS to the CPM, if requested by the CPM. From these logs, the CRS shall compile a monthly monitoring summary report to be included in the MCR. If there are no monitoring activities, the summary report shall specify why monitoring has been suspended. The CRS or alternate CRS shall report daily to the CPM on the status of cultural resources-related activities at the construction site, unless reducing or ending daily reporting is requested by the CRS and approved by the CPM.

The CRS, at his or her discretion, or at the request of the CPM, may informally discuss cultural resources monitoring and mitigation activities with Energy Commission technical staff (Staff).

Cultural resources monitoring activities are the responsibility of the CRS. Any interference with monitoring activities, removal of a monitor from duties assigned by the CRS, or direction to a monitor to relocate monitoring activities by anyone other than the CRS shall be considered non-compliance with these Conditions.

Upon becoming aware of any incidents of non-compliance with the Conditions and/or applicable LORS, the CRS and/or the project owner shall notify the CPM by telephone or e-mail within 24 hours. The CRS shall also recommend corrective action to resolve the problem or achieve compliance with the Conditions. When the issue is resolved, the CRS shall write a report describing the issue, the resolution of the issue, and the effectiveness of the resolution measures. This report shall be provided in the next MCR for the review of the CPM.

A Native American monitor shall be obtained to monitor ground disturbancealong with the CRS, alternate CRS, or CRMs. Informational [contact] lists of concerned Native Americans and guidelines for monitoring

shall be obtained from the Native American Heritage Commission. Preference in selecting a monitor shall be given to Native Americans with traditional ties to the area that shall be monitored. If efforts to obtain the services of a qualified Native American monitor are unsuccessful, the project owner shall immediately inform the CPM. The CPM will either identify potential monitors or will allow ground disturbance to proceed without a Native American monitor.

Verification:

1. At least 30 days prior to the start of ground disturbance, the CPM will provide to the CRS an electronic copy of a form to be used as a daily monitoring log. While monitoring is on-going, the project owner shall include in each MCR a copy of the monthly summary report of cultural resources-related monitoring prepared by the CRS.

2. Daily, as long as no cultural resources are found, the CRS shall provide a statement that "no cultural resources over 50 years of age were discovered" to the CPM as an e-mail, or in some other form acceptable to the CPM. If the CRS concludes that daily reporting is no longer necessary, a letter or e-mail providing a detailed justification for the decision to reduce or end daily reporting shall be provided to the CPM for review and approval at least 24 hours prior to reducing or ending daily reporting.

3. At least 24 hours prior to implementing a proposed change in monitoring level, documentation justifying the change shall be submitted to the CPM for review and approval.

4. No later than 30 days following the discovery of any Native American cultural materials, the project owner shall submit to the CPM copies of the information transmittal letters sent to the Chairperson of the Native American tribes or groups who requested the information. Additionally, the project owner shall submit to the CPM copies of letters of transmittal for all subsequent responses to Native American requests for notification, consultation, and reports and records and any comments or information provided in response by the Native Americans.

CUL-7 The project owner shall grant authority to halt construction to the CRS, alternate CRS, and the CRMs in the event of a discovery. Redirection of ground disturbance shall be accomplished under the direction of the construction supervisor in consultation with the CRS.

In the event cultural resources over 50 years of age or, if younger, considered exceptionally significant are found, or impacts to such resources can be anticipated, ground disturbance shall be halted or redirected in the immediate vicinity of the discovery sufficient to ensure that the resource is protected from further impacts. Monitoring and daily reporting as provided in these conditions shall continue during all ground-disturbing activities wherever project

construction is not halted. The halting or redirection of construction shall remain in effect until the CRS has visited the discovery, and all of the following have occurred:

1. The CRS has notified the project owner, and the CPM has been notified within 24 hours of the discovery, or by Monday morning if the cultural resources discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday morning, including a description of the discovery (or changes in character or attributes), the action taken (i.e. work stoppage or redirection), a recommendation of eligibility, and recommendations for mitigation of any cultural resources discoveries, whether or not a determination of significance has been made.

2. The CRS has completed field notes, measurements, and photography for a DPR 523 "Primary" form. The "Description" entry of the DPR 523 "Primary" form shall include a recommendation on the significance of the find. The project owner shall submit completed forms to the CPM.

3. The CRS, the project owner, and the CPM have conferred, and the CPM has concurred with the recommended eligibility of the discovery and approved the CRS's proposed data recovery, if any, including the curation of the artifacts, or other appropriate mitigation; and any necessary data recovery and mitigation have been completed.

Verification:

1. At least 30 days prior to the start of ground disturbance, the project owner shall provide the CPM and CRS with a letter confirming that the CRS, alternate CRS, and CRMs have the authority to halt construction activities in the vicinity of a cultural resources discovery, and that the project owner shall ensure that the CRS notifies the CPM within 24 hours of a discovery, or by Monday morning if the cultural resources discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday morning.

2. Completed DPR 523 forms for resources newly discovered during construction shall be submitted to the CPM for review and approval no later than 24 hours following the notification of the CPM, or 48 hours following the completion of data recordation/recovery, whichever the CRS decides is more appropriate for the subject cultural resource.

CULTURAL RESOURCES ACRONYM GLOSSARY

AD	Common Era
AFC	Application for Certification
Area of Analysis	The area within and around a project site that staff considers when compiling an inventory of cultural resources and when assessing potential impacts. This will vary with the kind of cultural resources under consideration.
ARMR	Archaeological Resource Management Report
BC	Before Common Era
CEQA	California Environmental Quality Act
CHRIS	California Historical Resources Information System
Conditions	Conditions of Certification
CRHR	California Register of Historical Resources
CRM	Cultural Resources Monitor
CRMMP	Cultural Resources Monitoring and Mitigation Plan
CRR	Cultural Resource Report
CRS	Cultural Resources Specialist
DPR 523	Department of Parks and Recreation cultural resource inventory form
FSA	Final Staff Assessment
LORS	laws, ordinances, regulations, and standards
MCR	Monthly Compliance Report
MLD	Most Likely Descendent
NAHC	Native American Heritage Commission
NRHP	National Register of Historic Places
OGE	Orange Grove Energy, the applicant
OGP	Orange Grove Project, the proposed power plant
OHP	Office of Historic Preservation
Project Area	The bounded area(s) identified by the applicant as the area within which they propose to build all the components of their project.
SA	Staff Assessment
SHPO	State Historic Preservation Officer
Staff	Energy Commission cultural resources technical staff
WEAP	Worker Environmental Awareness Program

REFERENCES

The *tn: 00000* in a reference below indicates the transaction number under which the item is catalogued in the Energy Commission's Docket Unit. The transaction number allows for quicker location and retrieval of individual items docketed for a case or used for ease of reference and retrieval of exhibits cited in briefs and used at Evidentiary Hearings.

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HAZARDOUS MATERIALS MANAGEMENT

Testimony of Alvin J. Greenberg, Ph.D. and Rick Tyler

SUMMARY OF CONCLUSIONS

Staff's evaluation of the proposed Orange Grove Project, (OGP) along with staff's proposed mitigation measures, indicates that hazardous materials use at the site would not present a significant impact to the public. With adoption of the proposed conditions of certification, the proposed project will comply with all applicable laws, ordinances, regulations, and standards. In response to Health and Safety Code, section 25531 et seq., Orange Grove Energy, L.P. (the applicant) would be required to develop a risk management plan. To ensure the adequacy of this plan, staff's proposed conditions of certification require that the risk management plan be submitted for concurrent review by the San Diego County Department of Environmental Health and Energy Commission staff. In addition, staff's proposed conditions of certification require that both the San Diego Department of Environmental Health and staff review and approve the risk management plan prior to delivery of any hazardous materials to the OGP site. Other proposed conditions of certification address the issue of the transportation, storage, and use of aqueous ammonia.

INTRODUCTION

The purpose of this hazardous materials management analysis is to determine if the proposed OGP has the potential to cause significant impacts on the public as a result of the use, handling, storage, or transportation of hazardous materials at the proposed site. If significant adverse impacts on the public are identified, Energy Commission staff must also evaluate the potential for facility design alternatives and additional mitigation measures to reduce those impacts to the extent feasible.

This analysis does not address the potential exposure of workers to hazardous materials used at the proposed facility. Employers must inform employees of hazards associated with their work and provide them with special protective equipment and training to reduce the potential for health impacts associated with the handling of hazardous materials. The **WORKER SAFETY AND FIRE PROTECTION** section of this document describes applicable requirements for the protection of workers from these risks.

Aqueous ammonia (19% ammonia in aqueous solution) is the only acutely hazardous material proposed to be either used or stored at the OGP in quantities exceeding the reportable amounts defined in the California Health and Safety Code, section 25532 (j) (OGE 2008a, Table 2.8-1). Aqueous ammonia will be used to control oxides of nitrogen (NO_x) emissions through selective catalytic reduction. The use of aqueous ammonia significantly reduces the risk that would otherwise be associated with the use of the more hazardous anhydrous form of ammonia. Use of the aqueous form eliminates the high internal energy associated with the anhydrous form, which is stored as a liquefied gas at high pressure. The high internal energy associated with the anhydrous form of ammonia can act as a driving force in an accidental release, which can rapidly introduce large quantities of the material to the ambient air and result in high down-wind

concentrations. Spills associated with the aqueous form are much easier to contain than those associated with anhydrous ammonia, and emissions from such spills are limited by the slow mass transfer from the surface of the spilled material.

Other hazardous materials, such as mineral and lubricating oils, cleaning detergents, and welding gasses will be present at the proposed OGE project. Hazardous materials used during construction would include petroleum products, compressed gases, paints, coatings, and adhesives. No acutely toxic hazardous materials will be used on site during construction. None of these materials pose significant potential for off-site impacts as a result of the quantities on site, their relative toxicity, their physical state, and/or their environmental mobility. Handling of hazardous materials during construction would comply with all applicable LORS and would aim to minimize environmental effects. OGP contractors would follow standard operating procedures when fueling and servicing construction equipment to prevent spills (OGE 2008a, Section 6.15.2.1).

Although no natural gas is stored, the project will also involve the handling of large amounts of natural gas. Natural gas poses some risk of both fire and explosion. The natural gas pipeline proposed for construction for this project would be approximately 2.4 miles long, running south and west from the OGP site to a connection with the San Diego Gas and Electric (SDG&E) gas main (OGE 2008a, Section 2.5.2). The OGP would also require the transportation of aqueous ammonia to the facility. This document addresses all potential impacts associated with the use and handling of hazardous materials.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

The following federal, state, and local laws and policies apply to the protection of public health and hazardous materials management. Staff's analysis examines the project's compliance with these requirements.

Hazardous Materials Management Table 1
Laws, Ordinances, Regulations, and Standards

Applicable Law	Description
Federal	
The Superfund Amendments and Reauthorization Act of 1986 (42 USC §9601 et seq.)	Contains the Emergency Planning and Community Right To Know Act (also known as SARA Title III).
The Clean Air Act (CAA) of 1990 (42 USC 7401 et seq. as amended)	Established a nationwide emergency planning and response program and imposed reporting requirements for businesses that store, handle, or produce significant quantities of extremely hazardous materials.
The CAA section on risk management plans (42 USC §112(r)	Requires states to implement a comprehensive system informing local agencies and the public when a significant quantity of such materials is stored or handled at a facility. The requirements of both SARA Title III and the CAA are reflected in the California Health and Safety Code, section 25531, et seq.
49 CFR 172.800	The U.S. Department of Transportation (DOT) requirement that suppliers of hazardous materials prepare and implement security plans.
49 CFR Part 1572, Subparts A and B	Requires suppliers of hazardous materials to ensure that all their hazardous materials drivers are in compliance with personnel background security checks.
The Clean Water Act (CWA) (40 CFR 112)	Aims to prevent the discharge or threat of discharge of oil into navigable waters or adjoining shorelines. Requires a written spill prevention, control, and countermeasures (SPCC) plan to be prepared for facilities that store oil that could leak into navigable waters.
Title 49, Code of Federal Regulations, Part 190	Outlines gas pipeline safety program procedures.
Title 49, Code of Federal Regulations, Part 191	Addresses transportation of natural and other gas by pipeline: annual reports, incident reports, and safety-related condition reports. Requires operators of pipeline systems to notify the DOT of any reportable incident by telephone and then submit a written report within 30 days.
Title 49, Code of Federal Regulations, Part 192	Addresses transportation of natural and other gas by pipeline and minimum federal safety standards, specifies minimum safety requirements for pipelines including material selection, design requirements, and corrosion protection. The safety requirements for pipeline construction vary according to the population density and land use that characterize the surrounding land. This part also contains regulations governing pipeline construction (which must be followed for Class 2 and Class 3 pipelines) and the requirements for preparing a pipeline integrity management program.
Federal Register (6 CFR Part 27) interim final rule	A regulation of the U.S. Department of Homeland Security that requires facilities that use or store certain hazardous materials to submit information to the department so that a vulnerability assessment can be conducted to determine what certain specified security measures shall be implemented.

Applicable Law	Description
State	
Title 8, California Code of Regulations, section 5189	Requires facility owners to develop and implement effective safety management plans that ensure that large quantities of hazardous materials are handled safely. While such requirements primarily provide for the protection of workers, they also indirectly improve public safety and are coordinated with the Risk Management Plan (RMP) process.
Title 8, California Code of Regulations, section 458 and sections 500 to 515	Sets forth requirements for the design, construction, and operation of vessels and equipment used to store and transfer ammonia. These sections generally codify the requirements of several industry codes, including the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, the American National Standards Institute (ANSI) K61.1 and the National Boiler and Pressure Vessel Inspection Code. These codes apply to anhydrous ammonia but are also used to design storage facilities for aqueous ammonia.
California Health and Safety Code, section 25531 to 25543.4	The California Accidental Release Program (CalARP) requires the preparation of a Risk Management Plan (RMP) and off-site consequence analysis (OCA) and submittal to the local Certified Unified Program Agency for approval.
California Health and Safety Code, section 41700	Requires that "No person shall discharge from any source whatsoever such quantities of air contaminants or other material which causes injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property."
California Safe Drinking Water and Toxic Enforcement Act (Proposition 65)	Prevents certain chemicals that cause cancer and reproductive toxicity from being discharged into sources of drinking water.
California Public Utilities Commission General Order 112-E and 58-A	Contains standards for gas piping construction and service.
Local	
San Diego County Code of Regulatory Ordinances, Title 6, Division 8, Chapter 11	Requirements for hazardous materials inventory and response plan.

The Certified Unified Program Agency (CUPA) with the responsibility to review Risk Management Plans (RMPs) and Hazardous Materials Business Plans (HMBPs) is the San Diego County Department of Environmental Health (DEH), Hazardous Materials Division (HMD). With regard to seismic safety issues, the site is located in Seismic Risk Zone 4. Construction and design of buildings and vessels storing hazardous materials will meet the seismic requirements of the Uniform Building Code and the California Building Code (OGE 2008a Section 6.3.1.5.2).

SETTING

Several factors associated with the area in which a project is to be located affect the potential for an accidental release of a hazardous material that could cause public health impacts. These include:

- local meteorology;
- terrain characteristics; and
- location of population centers and sensitive receptors relative to the project.

METEOROLOGICAL CONDITIONS

Meteorological conditions, including wind speed, wind direction, and air temperature, affect both the extent to which accidentally released hazardous materials would be dispersed into the air and the direction in which they would be transported. This affects the potential magnitude and extent of public exposure to such materials, as well as their associated health risks. When wind speeds are low and the atmosphere stable, dispersion is severely reduced but can lead to increased localized public exposure.

Recorded wind speeds and directions are described in the **AIR QUALITY** section (6.2) and **Appendix 6.2A** of the Application for Certification (AFC) (OGE 2008a). Staff agrees with the applicant that use of F stability (stagnated air, very little mixing), wind speed of 1.5 meters per second, and a temperature of 114°F are appropriate for conducting the off-site consequence analysis (OGE 2008a, Appendix 6.15A, Table 6.15A-1).

TERRAIN CHARACTERISTICS

The location of elevated terrain is often an important factor in assessing potential exposure. An emission plume resulting from an accidental release may impact high elevations before impacting lower elevations. The site's elevation is about 420 feet above mean sea level, and the topography of the immediate vicinity slopes gently. Elevated terrain exists to the north, east, and west of the project where hills begin rising steeply, reaching between 1000 and 1500 feet elevation within about a mile from the site (OGE 2008a, Section 6.16.1 and Figure 6.16-1).

LOCATION OF EXPOSED POPULATIONS AND SENSITIVE RECEPTORS

The general population includes many sensitive subgroups that may be at greater risk from exposure to emitted pollutants. These sensitive subgroups include the very young, the elderly, and those with existing illnesses. In addition, the location of the population in the area surrounding a project site may have a major bearing on health risk. Residences and other public receptors (commercial uses) in the project vicinity (within a 1.86-mile radius) are shown in **Figure 6.16-2** (OGE 2008a). There are no sensitive receptors within this area of study. The nearest sensitive receptor is the Vivian Banks Charter School located approximately 2.0 miles west of the site. The nearest public receptors are commercial uses located on the property boundary south and west of the project site (OGE 2008a, Section 6.16.2 and Figure 6.16-2).

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

Staff reviewed and assessed the potential for the transportation, handling, and use of hazardous materials to impact the surrounding community. All chemicals and natural gas were evaluated. Staff's analysis addresses the potential impacts on all members of the population including the young, the elderly, and people with existing medical conditions that may make them more sensitive to the adverse effects of hazardous materials. In order to accomplish this goal, staff utilized the most current public health exposure levels (both acute and chronic) that are established to protect the public from the effects of an accidental chemical release.

In order to assess the potential for released hazardous materials to travel off site and affect the public, staff analyzed several aspects of the proposed use of these materials at the facility. Staff recognizes that some hazardous materials must be used at power plants. Therefore, staff conducted its analysis by examining the choice and amount of chemicals to be used, the manner in which the applicant will use the chemicals, the manner by which they will be transported to the facility and transferred to facility storage tanks, and the way the applicant plans to store the materials on site.

Staff reviewed the applicant's proposed engineering and administrative controls concerning hazardous materials usage. Engineering controls are the physical or mechanical systems, such as storage tanks or automatic shut-off valves, that can prevent the spill of hazardous material from occurring, or which can either limit the spill to a small amount or confine it to a small area. Administrative controls are the rules and procedures that workers at the facility must follow that will help to prevent accidents or to keep them small if they do occur. Both engineering and administrative controls can act as methods of prevention or as methods of response and minimization. In both cases, the goal is to prevent a spill from moving off site and causing harm to the public.

Staff reviewed and evaluated the applicant's proposed use of hazardous materials as described by the applicant (OGE 2008a, Section 6.15). Staff's assessment followed the five steps listed below.

- Step 1: Staff reviewed the chemicals and the amounts proposed for on-site use as listed in Revised **Table 2.8-1** of the AFC (TRC2008f, Exhibit 48-1) and determined the need and appropriateness of their use.
- Step 2: Those chemicals proposed for use in small amounts or whose physical state is such that there is virtually no chance that a spill would migrate off site and impact the public were removed from further assessment.
- Step 3: Measures proposed by the applicant to prevent spills were reviewed and evaluated. These included engineering controls such as automatic shut-off valves and different-sized transfer-hose couplings and administrative controls such as worker training and safety management programs.
- Step 4: Measures proposed by the applicant to respond to accidents were reviewed and evaluated. These measures also included engineering controls such as

catchment basins and methods to keep vapors from spreading and administrative controls such as training emergency response crews.

- Step 5: Staff analyzed the theoretical impacts on the public of a worst-case spill of hazardous materials, as reduced by the mitigation measures proposed by the applicant. When mitigation methods proposed by the applicant are sufficient, no further mitigation is recommended. If the proposed mitigation is not sufficient to reduce the potential for adverse impacts to an insignificant level, staff will propose additional prevention and response controls until the potential for causing harm to the public is reduced to an insignificant level. It is only at this point that staff can recommend that the facility be allowed to use hazardous materials.

DIRECT/INDIRECT IMPACTS AND MITIGATION

Small Quantity Hazardous Materials

Hazardous chemicals such as mineral and lubricating oils, cleaning detergents, welding gasses, and other various chemicals would be used and stored in relatively small amounts. (See **HAZARDOUS MATERIALS APPENDIX B** for a list of all chemicals proposed for use and storage at the OGP). In conducting the analysis, staff determined in Steps 1 and 2 that these materials, although present at the proposed facility, pose a minimal potential for off-site impacts since they will be stored in small quantities, have low mobility/volatility, or have low levels of toxicity. These hazardous materials are eliminated from further consideration.

After removing from consideration those chemicals that pose no risk of off-site impact in Steps 1 and 2, staff continued with Steps 3, 4, and 5 to review the remaining hazardous materials: natural gas and aqueous ammonia. However, the project will be limited to using, storing, and transporting only those hazardous materials listed in Appendix B of this document as per staff's proposed condition **HAZ-1**.

Large Quantity Hazardous Materials

Natural Gas

Natural gas poses a fire and/or possible explosion risk because of its flammability. Natural gas is composed mostly of methane, but also contains ethane, propane, nitrogen, butane, isobutene, and isopentane. It is colorless, odorless, and tasteless and is lighter than air. Natural gas can cause asphyxiation when methane is 90% in concentration. Methane is flammable when mixed in air at concentrations of 5-14%, which is also the detonation range. Natural gas, therefore, poses a risk of fire and/or possible explosion if a release occurs under certain specific conditions. However, it should be noted that, due to its tendency to disperse rapidly (Lees 1998), natural gas is less likely to cause explosions than many other fuel gases such as propane or liquefied petroleum gas, but can explode under certain conditions (as demonstrated by the recent natural gas detonation in Belgium in July 2004).

While natural gas would be used in significant quantities, it would not be stored on site. It would be delivered via a new 2.4-mile pipeline that would connect the proposed OGP site with an existing SDG&E gas main located southwest of the project site (OGE 2008a, Section 2.5.2). A new metering station would be constructed near the tie-

in point. The proposed pipeline route is depicted in Figure 2.2-4 of the AFC (OGE 2008a). The risk of a fire and/or explosion on site can be reduced to insignificant levels through adherence to applicable codes and the development and implementation of effective safety management practices. The National Fire Protection Association (NFPA) code 85A requires both the use of double-block and bleed valves for gas shut off and automated combustion controls. These measures will significantly reduce the likelihood of an explosion in gas-fired equipment. Additionally, start-up procedures would require air purging of the gas turbines prior to start up, thereby precluding the presence of an explosive mixture. The safety management plan proposed by the applicant would address the handling and use of natural gas and would significantly reduce the potential for equipment failure because of either improper maintenance or human error.

The natural gas pipeline between the project site and the metering station would be owned and operated by the applicant. The entire gas pipeline would be designed, constructed, and operated in accordance with Federal Department of Transportation (DOT) regulations as well as applicable Caltrans and County laws (OGE 2008a, Sections 2.5.2). The natural gas pipeline must also be constructed and operated in accordance with Title 49, Code of Federal Regulations (CFR), Parts 190, 191, and 192 (see Table 1 LORS). Staff concludes that existing LORS are sufficient to ensure minimal risks of pipeline failure.

Aqueous Ammonia

Aqueous ammonia would be used to control the emission of oxides of nitrogen (NO_x) from the combustion of natural gas at the OGP. The accidental release of aqueous ammonia without proper mitigation can result in significant down-wind concentrations of ammonia gas. The OGP would store 19% aqueous ammonia solution in an above-ground ammonia tank with a maximum capacity of 10,000 gallons (OGE 2008a, Section 6.15.2.2.5). The secondary containment basin would also be above ground and capable of holding the full contents of the tank plus rainfall. Plastic balls would be placed at the bottom of the secondary containment basin and serve to limit the surface area of any spilled aqueous ammonia**.** Limiting the surface area reduces the evaporation rate of ammonia vapors from the basin. The tanker truck transfer pad would be contained by a berm that drains into the storage tank's secondary containment structure.

Based on staff's analysis described above, aqueous ammonia is the only hazardous material that may pose a significant risk of off-site impact. The use of aqueous ammonia can result in the release of ammonia vapor in the event of a spill. This is a result of its moderate vapor pressure and the large amounts of aqueous ammonia that will be used and stored on site. However, the use of aqueous ammonia poses far less risk than the use of the far more hazardous anhydrous ammonia (ammonia that is not diluted with water).

To assess the potential impacts associated with an accidental release of aqueous ammonia, staff uses four benchmark exposure levels of ammonia gas occurring off site. These include:

1. the lowest concentration posing a risk of lethality, 2,000 parts per million (ppm);

2. the concentration immediately dangerous to life and health level of 300 ppm;

3. the emergency response planning guideline level 2 of 150 ppm, which is also the RMP level 1 criterion used by U.S. Environmental Protection Agency (EPA) and California; and

4. the level considered by the Energy Commission staff to be without serious adverse effects on the public for a one-time exposure of 75 ppm.

If the potential exposure associated with a potential release exceeds 75 ppm at any public receptor, staff will also assess the probability of occurrence of the release, the severity of the consequences, and the nature of the potentially exposed population in determining whether the likelihood and extent of potential exposure are sufficient to support a finding of potentially significant impact. A detailed discussion of the exposure criteria considered by staff, as well as their applicability to different populations and exposure-specific conditions, is provided in **HAZARDOUS MATERIALS APPENDIX A**.

Section 6.15.2.2.7 and Appendix 6.15A of the AFC (OGE 2008a) describe the assumptions and the modeling parameters used for the worst-case and alternative accidental releases of aqueous ammonia in the applicant's off-site consequence analysis (OCA). Pursuant to the California Accidental Release Program (CalARP) regulations (federal risk management plan regulations do not apply to sources that store or use aqueous ammonia solutions below 20%), the OCA was performed for the worst-case release scenario, which involved the failure and complete discharge of the storage tank, as well as an alternative release scenario involving a spill during truck unloading. Ammonia emissions from the two potential release scenarios were calculated following methods provided in the RMP off-site consequence analysis guidance, U.S. EPA, April 1999. The maximum temperature recorded in the area in the past three years (114°F), a wind speed of 1.5 meters per second, and atmospheric stability class F were used for emission and dispersion calculations for the worst-case scenario. The default temperature of EPA's OCA Guidance (77°F), a wind speed of 3.0 meters per second, and atmospheric stability class D were used for the alternative scenario. Potential off-site ammonia concentrations were estimated using the SCREEN3 numerical dispersion model.

Hazardous Materials Management Table 2 shows the applicant's modeled distance to three benchmark criteria concentrations.

Hazardous Materials Management Table 2
Distance to EPA/CalARP and Energy Commission Toxic Endpoints

Scenario	Distance in Feet to IDLH (300 ppm)	Distance in Feet to AIHA's ERPG-2 (150 ppm)	Distance in Feet to Energy Commission level (75 ppm)
Worst Case	627	951	1434
Alternative	144	213	312

Source: OGE 2008a Table 6.15A-7.

Figures 6.15-2 and 6.15-3 of the AFC (OGE 2008a) show how far each benchmark concentration would reach from the ammonia tank site for the worst-case and alternative scenarios. Ammonia concentrations exceeding 75 ppm, and 150 ppm would extend beyond the facility fence line for the worst-case scenario, but not for the alternative scenario. However, concentrations exceeding 75 ppm would not reach the nearest residence or any public receptor (OGE 2008a Section 6.15.2.2.9). However, the modeling shows that under the stated worst-case conditions, an airborne concentration of ammonia greater than 75 ppm could possibly reach State Route 76 (SR 76). Staff has reviewed the potential for this possibility and has determined that, due to the conservative nature of the modeling, the probability that ammonia vapors could reach SR 76 and impact drivers is insignificant. Staff determined that while the applicant used proper meteorological input factors as required by the Cal-ARP and U.S. EPA RMP programs, these default values are not site specific and thus overestimated the airborne concentration of ammonia that would be reached at this particular site. The secondary containment basin and the plastic balls greatly restrict air flow around and over the aqueous ammonia secondary containment area and these restricted and lower speed air flows would result in much lower rates of evaporation from the containment area. Also, staff believes that a more realistic temperature of spilled aqueous ammonia should be used when determining a reasonable potential for off-site impacts and resultant mitigation. In other power plant siting cases, staff has used the monthly mean high temperature and both SCREEN3 and HARP air dispersion models with two different air speeds (1.5 m/sec and 0.1 m/sec) and found that the airborne concentration of ammonia would be significantly lower than what the applicant's model predicts using the required models and inputs. Furthermore, the potential for accidents resulting in the release of hazardous materials is greatly reduced through implementation of a safety management program that would include the use of both engineering and administrative controls. Elements of both facility controls and the safety management plan are summarized below.

Mitigation

The potential for accidents resulting in the release of hazardous materials is greatly reduced through implementation of a safety management program that would include the use of both engineering and administrative controls. Elements of both facility controls and the safety management plan are summarized below.

Engineering Controls

Engineering controls help to prevent accidents and releases (spills) from moving off site and affecting communities by incorporating engineering safety design criteria in the design of the project. The engineered safety features proposed by the applicant for use at the OGP include:

- storage of hazardous materials in locations specifically designed for each material; installation of high and low level sensors and alarms for equipment oil reservoirs;
- construction of a concrete bermed secondary containment areas surrounding the aqueous ammonia storage tank;
- construction of a sloped concrete pad beneath the truck unloading area that drains into the storage tank's secondary containment structure;

- placement of two layers of floating high density polyethylene (HDPE) balls (about 1.5-3 inches in diameter) in the aqueous ammonia secondary containment area to reduce the surface area of evaporating liquid to a tenth of the total surface area; and
- process protective systems including continuous tank level monitors, temperature and pressure monitors, alarms, excess flow valves, and emergency isolation valves.

Administrative Controls

Administrative controls also help prevent accidents and releases (spills) from moving off site and affecting neighboring communities by establishing worker training programs, process safety management programs, and complying with all applicable health and safety laws, ordinances, and standards.

A worker health and safety program will be prepared by the applicant and include (but not be limited to) the following elements (see the **WORKER SAFETY AND FIRE PROTECTION** section for specific regulatory requirements):

- worker training regarding chemical hazards, health and safety issues, and hazard communication;
- procedures to ensure the proper use of personal protective equipment;
- safety operating procedures for the operation and maintenance of systems utilizing hazardous materials;
- fire safety and prevention; and
- emergency response actions including facility evacuation, hazardous material spill clean-up, and fire prevention.

At the facility, the project owner will be required to designate an individual with the responsibility and authority to ensure a safe and healthful work place. The project health and safety official will oversee the health and safety program and have the authority to halt any action or modify any work practice to protect the workers, facility, and the surrounding community in the event of a violation of the health and safety program.

The applicant will prepare a risk management plan for aqueous ammonia, as required by both CalARP regulations and Condition of Certification **HAZ-2**. This condition also includes the requirement for a program for the prevention of accidental releases and responses to an accidental release of aqueous ammonia. A hazardous materials business plan will also be prepared by the applicant that would incorporate state requirements for the handling of hazardous materials (OGE 2008a, Section 6.15.5). Other administrative controls would be required in proposed Conditions of Certification **HAZ-1** (limitations on the use and storage of hazardous materials and their strength and volume) and **HAZ-3** (development of a safety management plan).

On-Site Spill Response

In order to address the issue of spill response, the facility will prepare and implement an emergency response plan that includes information on hazardous materials contingency and emergency response procedures, spill containment and prevention systems, personnel training, spill notification, on-site spill containment, and prevention equipment

and capabilities, as well as other elements. Emergency procedures will be established which include evacuation, spill cleanup, hazard prevention, and emergency response.

The North County Fire Protection District (NCFPD) would be the first responders to hazardous materials incidents, with full response provided by the San Diego City and County Department of Environmental Health Hazardous Materials Incident Response Team (DEH-HIRT). In addition, the applicant has identified Clean Harbors Environmental Services as the clean-up contractor in the event of a hazardous materials spill (TRC2008f Data Response #51 and Exhibit 54-1). The DEH-HIRT is capable of handling any hazardous materials-related incident at the proposed facility and could respond from two stations; Station No. 44, located at 10011 Black Mountain Road in San Diego and the San Diego County Station located at 1255 Imperial Avenue. Staff finds that the DEH-HIRT teams are capable of responding to a hazardous materials emergency call from the OGP with an adequate response time.

Transportation of Hazardous Materials

Hazardous materials including aqueous ammonia will be transported to the facility by tanker truck. While many types of hazardous materials will be transported to the site, staff believes that transport of aqueous ammonia poses the predominant risk associated with hazardous materials transport.

Staff reviewed the applicant's proposed transportation routes for hazardous materials delivery. Trucks would travel on Interstate 15 (I 15) to SR 76 to Pala Del Norte Road to the project site (OGE 2008a, Sections 6.11.2.3.2 and 2.2). The applicant has stated that there are no sensitive receptors (including schools, day-care facilities, hospitals, or long-term health care facilities) along SR 76 between I 15 and the project site (OGE 2008a Section 6.15.1).

Ammonia can be released during a transportation accident and the extent of impact in the event of such a release would depend upon the location of the accident and the rate of dispersion of ammonia vapor from the surface of the aqueous ammonia pool. The likelihood of an accidental release during transport is dependent upon three factors:

- the skill of the tanker truck driver;
- the type of vehicle used for transport; and
- accident rates.

To address this concern, staff evaluated the risk of an accidental transportation release in the project area. Staff's analysis focused on the project area after the delivery vehicle leaves the main highway (I 15). Staff believes it is appropriate to rely upon the extensive regulatory program that applies to the shipment of hazardous materials on California highways to ensure safe handling in general transportation (see Federal Hazardous Materials Transportation Law 49 USC §5101 et seq, DOT regulations 49 CFR subpart H, §172–700, and California Department of Motor Vehicles (DMV) regulations on hazardous cargo). These regulations also address the issue of driver competence. See AFC section 6.11 for additional information on regulations governing the transport of hazardous materials.

To address the issue of tanker truck safety, aqueous ammonia will be delivered to the proposed facility in DOT-certified vehicles with design capacities of 8,000 gallons. These vehicles will be designed to DOT Code MC-307. These are high-integrity vehicles designed to haul caustic materials such as ammonia. Staff has, therefore, proposed Condition of Certification **HAZ-5** to ensure that, regardless of which vendor supplies the aqueous ammonia, delivery will be made in a tanker that meets or exceeds the specifications described by these regulations.

To address the issue of accident rates, staff reviewed the technical and scientific literature on hazardous materials transportation (including tanker trucks) accident rates in the United States and California. Staff relied on six references and three federal government databases to assess the risk of a hazardous materials transportation accident.

Staff used the data from the Davies and Lees (1992) article, which references both the 1990 Harwood et al. and 1993 Harwood studies, to determine that the frequency of release for the transportation of hazardous materials in the U.S. is between 0.06 and 0.19 releases per 1,000,000 miles traveled on well-designed roads and highways. The maximum use of aqueous ammonia each year of the operation of the proposed OGP project will require about six tanker truck deliveries of aqueous ammonia per year, each delivering 8,000 gallons (OGE 2008a Table 2.8-1 and Section 6.15.2.4). Each delivery will travel approximately 4.5 miles from I 15 along SR 76 and about 0.3 miles along Pala Del Norte Road to the facility.

This would result in about 30 miles of delivery tanker truck travel in the project area per year (with a full load). Staff believes that the risk over this distance is insignificant. Data from the U.S. DOT show that the actual risk of a fatality over the past five years from all modes of hazardous material transportation (rail, air, boat, and truck) is approximately 0.1 in 1,000,000.

In addition, staff used a transportation risk assessment model (developed by staff) in order to calculate the probability of an accident resulting in a release of a hazardous material due to delivery from the freeway to the facility along SR 76 and Pala Del Norte Road. Results show a risk of 0.535 in 1,000,000 for one trip from I 15 and a total annual risk of 3.2 in 1,000,000 for six deliveries from I 15. This risk was calculated using accident rates on various types of roads (in this case, rural two-lane) with distances traveled on each type of road computed separately. Although it is an extremely conservative model in that it includes risk of accidental release from all modes of hazardous materials transportation and does not distinguish between a high-integrity steel tanker truck and other less secure modes, the results still show that the risk of a transportation accident is insignificant.

Additional measures proposed by the applicant to reduce potential impacts from the delivery of aqueous ammonia to the site include the use of trucks with a smaller turn radius than that of the sharpest curve on SR 76, the use of an escort vehicle for the portion of SR 76 between Pankey Road and the site, and restriction of delivery times to between 10 am and 2 pm to avoid peak traffic hours and school busses along SR 76 (OGE 2008a Section 6.15.2.4).

Staff believes that the risk of exposure to significant concentrations of aqueous ammonia during transportation to the facility is insignificant because of the low probability that an accidental release of a sufficient quantity would be dangerous to the public. The transportation of similar volumes of hazardous materials on the nation's highways is neither unique nor infrequent. Staff's analysis of the transportation of aqueous ammonia to the proposed facility (along with data from the U.S. DOT) demonstrates that the risk of accident and exposure is less than significant.

In oRoader to ensure that the risk of an accident involving the transport of aqueous ammonia to the power plant is insignificant, staff proposes an additional administrative control in proposed Condition of Certification **HAZ-6** that would require the use of only the specified route to the site (that being from I 15 to the facility via SR 76) and that deliveries of aqueous ammonia be scheduled only during those times of the day when school buses are not present on the transportation route. The project owner would be required to coordinate those deliveries with any school in the area whose buses (or contractor buses) use the designated hazardous materials transportation route.

Based on the environmental mobility, toxicity, the quantities at the site, and frequency of delivery, it is staff's opinion that aqueous ammonia poses the predominate risk associated with both use and hazardous materials transportation. Staff concludes that the risk associated with the transportation of other hazardous materials to the proposed project does not significantly increase the risk of ammonia transportation.

Seismic Issues

It is possible that an earthquake could cause the failure of a hazardous materials storage tank. An earthquake could also cause failure of the secondary containment system (berms and dikes), as well as the failure of electrically controlled valves and pumps. The failure of all of these preventive control measures might then result in a vapor cloud of hazardous materials that could move off site and affect residents and workers in the surrounding community. The effects of the Loma Prieta earthquake of 1989, the Northridge earthquake of 1994, and the earthquake in Kobe, Japan, in January 1995, have all heightened concerns about earthquake safety.

Information obtained after the January 1994 Northridge earthquake showed that some damage was caused both to several large storage tanks and to smaller tanks associated with the water treatment system of a cogeneration facility. The tanks with the greatest damage, including seam leakage, were older tanks, while the newer tanks sustained displacements and failures of attached lines. Therefore, staff conducted an analysis of the codes and standards which should be followed when designing and building storage tanks and containment areas to withstand a large earthquake. Staff also reviewed the impacts of the February 2001 Nisqually earthquake near Olympia, Washington, a state with similar seismic design codes as California. No hazardous materials storage tanks failed as a result of that earthquake. Referring to the sections on **GEOLOGIC HAZARDS AND RESOURCES** and **FACILITY SAFETY DESIGN** in the AFC, staff notes that the proposed facility will be designed and constructed to the standards of the California Building Code for Seismic Zone 4 (OGE 2008a, Section 6.3.1.5.2). Therefore, on the basis of what occurred in Northridge with older tanks and

the lack of failures during the Nisqually earthquake (with newer tanks), staff determined that tank failures during seismic events are not probable and do not represent a significant risk to the public.

Site Security

The applicant proposes to use hazardous materials identified by the U.S. EPA as requiring the development and implementation of special site security measures to prevent unauthorized access. The U.S. EPA published a Chemical Accident Prevention Alert regarding site security (EPA 2000a), the U.S. Department of Justice published a special report entitled *Chemical Facility Vulnerability Assessment Methodology* (US DOJ 2002), the North American Electric Reliability Council published *Security Guidelines for the Electricity Sector* in 2002 (NERC 2002), and the U.S. Department of Energy (DOE) published the draft *Vulnerability Assessment Methodology for Electric Power Infrastructure* in 2002 (DOE 2002). The energy generation sector is one of 14 areas of critical infrastructure listed by the U.S. Department of Homeland Security. On April 9, 2007, the U.S Department of Homeland Security published in the Federal Register (6 CFR Part 27) an interim final rule requiring that facilities that use or store certain hazardous materials conduct vulnerability assessments and implement certain specified security measures. This rule was implemented with the publication of Appendix A, the list of chemicals, on November 2, 2007. While the rule applies to aqueous ammonia solutions of 20% or greater and this proposed facility plans to utilize a 19% aqueous ammonia solution, staff still believes that all power plants under the jurisdiction of the Energy Commission should implement a minimum level of security consistent with the guidelines listed here.

The applicant has stated that a security plan will be prepared for the proposed facility in accordance with NERC's guidelines (NERC 2002) and will include the following components: a vulnerability and risk assessment, threat response capability, emergency management, continuity of business processes, communications, physical security, information technology/cyber security, employment screening, and protecting potentially sensitive information (OGE 2008a, Section 6.15.2.2.10).

In order to ensure that neither this project nor a shipment of hazardous material is the target of unauthorized access, staff's proposed Conditions of Certification **HAZ-7** and **HAZ-8** address both construction security and operation security plans. These plans would require implementation of site security measures consistent with the above-referenced documents.

The goal of these conditions of certification is to provide for the minimum level of security for power plants necessary for the protection of California's electrical infrastructure from malicious mischief, vandalism, or domestic/foreign terrorist attacks. The level of security needed for the OGP is dependent upon the threat imposed, the likelihood of an adversarial attack, the likelihood of success in causing a catastrophic event, and the severity of the consequences of that event. The results of the off-site consequence analysis prepared as part of the RMP will be used, in part, to determine the severity of consequences of a catastrophic event.

In oRoader to determine the level of security, the Energy Commission staff used an internal vulnerability assessment decision matrix modeled after the U.S. Department of

Justice Chemical Vulnerability Assessment Methodology (July 2002), the North American Electric Reliability Council's (NERC) 2002 guidelines, the U.S. DOE VAM-CF model, and the U.S. Department of Homeland Security regulations published in the Federal Register (Interim Final Rule 6 CFR Part 27). Staff determined that this project would fall into the category of low vulnerability due to the rural setting and absence of nearby sensitive receptors. Staff therefore proposes that certain security measures be implemented but does not propose that the project owner conduct its own vulnerability assessment.

These security measures include perimeter fencing and breach detectors, alarms, site access procedures for employees and vendors, site personnel background checks, and law enforcement contacts in the event of a security breach. Site access for vendors shall be strictly controlled. Consistent with current state and federal regulations governing the transport of hazardous materials, hazardous materials vendors will have to maintain their transport vehicle fleet and employ only properly licensed and trained drivers. The project owner will be required, through the use of contractual language with vendors, to ensure that vendors supplying hazardous materials strictly adhere to the U.S. DOT requirements for hazardous materials vendors to prepare and implement security plans (as per 49 CFR 172.800) and to ensure that all hazardous materials drivers are in compliance through personnel background security checks (as per 49 CFR Part 1572, Subparts A and B). The compliance project manager (CPM) may authorize modifications to these measures or may require additional measures in response to additional guidance provided by the U.S. Department of Homeland Security, the U.S. DOE, or the NERC, after consultation with both appropriate law enforcement agencies and the applicant.

CUMULATIVE IMPACTS AND MITIGATION

Staff analyzed the potential for the existence of cumulative impacts. A significant cumulative hazardous materials impact is defined as the simultaneous uncontrolled release of hazardous materials from multiple locations in a form (gas or liquid) that could cause a significant impact where the release of one hazardous material alone would not cause a significant impact. Existing locations that use or store gaseous or liquid hazardous materials, or locations where such facilities might likely be built, were both considered. The applicant provided in Section 6.1.2 and Table 6.1-2 (OGE 2008a) a list of existing and planned projects in the vicinity of the OGP site. None of the facilities listed have the potential to pose a risk of offsite impacts related to hazardous materials (OGE 2008a, Section 6.15.2.3). Staff believes that while cumulative impacts are theoretically possible, they are not probable because of the many safeguards implemented to both prevent and control an uncontrolled release. The chances of one uncontrolled release occurring are remote. The chance of two or more occurring simultaneously, with resulting airborne plumes mingling to create a significant impact, are even more remote. Staff believes the risk to the public is insignificant.

The applicant will develop and implement a hazardous materials handling program for the OGP independent of any other projects considered for potential cumulative impacts. Staff believes that the facility, as proposed by the applicant and with the additional mitigation measures proposed by staff, poses a minimal risk of accidental release that could result in off-site impacts. It is unlikely that an accidental release that has very low

probability of occurrence (about one in one million per year) would independently occur at the OGP site and another facility at the same time. Therefore, staff concludes that the facility would not contribute to a significant hazardous materials-related cumulative impact.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

No hazardous materials-related comments have been received.

COMPLIANCE WITH LAWS, ORDINANCES, REGULATIONS, AND STANDAROADS

Staff concludes that construction and operation of the OGP project would be in compliance with all applicable laws, ordinances, regulations, and standards (LORS) regarding long-term and short-term project impacts in the area of hazardous materials management.

CONCLUSIONS

Staff's evaluation of the proposed project (with proposed mitigation measures) indicates that hazardous material use will pose no significant impact to the public. Staff's analysis also shows that there will be no significant cumulative impact. With adoption of the proposed conditions of certification, the proposed project will comply with all applicable LORS. In response to Health and Safety Code, section 25531 et seq., the applicant will be required to submit a Risk Management Plan (RMP). To ensure the adequacy of the RMP, staff's proposed conditions of certification require that the RMP be submitted for concurrent review by the San Diego County Department of Environmental Health, Hazardous Materials Division and by Energy Commission staff. In addition, staff's proposed conditions of certification require the review and approval of the RMP by staff prior to the delivery of any hazardous materials to the facility. Other proposed conditions of certification address the issue of the transportation, storage, and use of aqueous ammonia, in addition to site security matters.

Staff recommends that the Energy Commission impose the proposed conditions of certification, presented herein, to ensure that the project is designed, constructed, and operated to comply with all applicable LORS and to protect the public from significant risk of exposure to an accidental ammonia release. If all mitigation proposed by the applicant and staff are required and implemented, the use, storage, and transportation of hazardous materials will not present a significant risk to the public.

Staff proposes eight conditions of certification mentioned throughout the text (above), and listed below. Condition of Certification **HAZ-1** ensures that no hazardous material would be used at the facility except as listed in **APPENDIX B** of the staff assessment, unless there is prior approval by the Energy Commission compliance project manager. Condition of Certification **HAZ-2** requires that an RMP be prepared and submitted prior to the delivery of aqueous ammonia.

Staff believes that an accidental release of aqueous ammonia during transfer from the delivery tanker to the storage tank is the most probable accident scenario and therefore proposes Condition of Certification (**HAZ-3**) requiring the development of a safety management plan for the delivery of all liquid hazardous materials, including aqueous ammonia. The development of a safety management plan addressing the delivery of all liquid hazardous materials during construction, commissioning, and operations will further reduce the risk of any accidental release not addressed by the proposed spill-prevention mitigation measures and the required RMP. This plan would additionally prevent the mixing of incompatible materials that could result in toxic vapors. Condition of Certification **HAZ-4** requires that the aqueous ammonia storage tank be designed to certain rigid specifications. The transportation of hazardous materials is addressed in Conditions of Certification **HAZ-5** and **HAZ-6**. Site security during both the construction and operations phases is addressed in Conditions of Certification **HAZ-7** and **HAZ-8.**

PROPOSED CONDITIONS OF CERTIFICATION

HAZ-1 The project owner shall not use any hazardous materials not listed in APPENDIX B, below, or in greater quantities or strengths than those identified by chemical name in APPENDIX B, below, unless approved in advance by the Compliance Project Manager (CPM).

Verification: The project owner shall provide to the CPM, in the Annual Compliance Report, a list of hazardous materials contained at the facility.

HAZ-2 The project owner shall concurrently provide a Business Plan and a Risk Management Plan (RMP) prepared pursuant to the California Accidental Release Program (CalARP) to the San Diego County Department of Environmental Health, Hazardous Materials Division (HMD) and the CPM for review. After receiving comments from the San Diego County DEH HMD and the CPM, the project owner shall reflect all recommendations in the final documents. Copies of the final Business Plan and RMP shall then be provided to the San Diego County DEH HMD and the North County Fire Protection District for information and to the CPM for approval.

Verification: At least thirty (30) days prior to receiving any hazardous material on the site for commissioning or operations, the project owner shall provide a copy of a final Business Plan to the CPM for approval. At least thirty (30) days prior to delivery of aqueous ammonia to the site, the project owner shall provide the final RMP to the Certified Unified Program Agency and the North County Fire Protection District for information and to the CPM for approval.

HAZ-3 The project owner shall develop and implement a Safety Management Plan for delivery of aqueous ammonia and other liquid hazardous materials by tanker truck. The plan shall include procedures, protective equipment requirements, training, and a checklist. It shall also include a section describing all measures to be implemented to prevent mixing of incompatible hazardous materials including provisions to maintain lockout control by a power plant employee not involved in the delivery or transfer operation. This plan shall be applicable during construction, commissioning, and operation of the power plant.

Verification: At least thirty (30) days prior to the delivery of any liquid hazardous material to the facility, the project owner shall provide a Safety Management Plan as described above to the CPM for review and approval.

HAZ-4 The aqueous ammonia storage facility shall be designed to either the ASME Pressure Vessel Code and ANSI K61.6 or to API 620. In either case, the storage tank shall be protected by a secondary containment basin capable of holding 125% of the storage volume or the storage volume plus the volume associated with 24 hours of rain assuming the 25-year storm. The final design drawings and specifications for the ammonia storage tank and secondary containment basins shall be submitted to the CPM.

Verification: At least sixty (60) days prior to delivery of aqueous ammonia to the facility, the project owner shall submit final design drawings and specifications for the ammonia storage tank and secondary containment basin to the CPM for review and approval.

HAZ-5 The project owner shall direct all vendors delivering aqueous ammonia to the site to use only tanker truck transport vehicles which meet or exceed the specifications of DOT Code MC-307.

Verification: At least thirty (30) days prior to receipt of aqueous ammonia on site, the project owner shall submit copies of the notification letter to supply vendors indicating the transport vehicle specifications to the CPM for review and approval.

HAZ-6 At least thirty (30) days prior to receipt of any hazardous materials on site, the project owner shall direct all vendors delivering any hazardous material to the site to use only the route approved by the CPM (I 15 to the project site via SR 76). The project owner shall obtain approval of the CPM if an alternate route is desired. The project owner shall also consult with any school in the area where school buses use the designated hazardous materials transportation route and shall prohibit through contractual language the transportation of aqueous ammonia to the site that would coincide with school bus traffic along the approved route. The project shall provide evidence of consultation with the school(s) to the CPM.

Verification: At least thirty (30) days prior to receipt of any hazardous materials on site, the project owner shall submit to the CPM for review and approval copies of 1) notices to hazardous materials vendors describing the required transportation route, 2) the contract with the aqueous ammonia vendor describing the time of day limitation on deliveries, and 3) evidence that schools in the area who use the transport route have been consulted.

HAZ-7 Prior to commencing construction, a site-specific Construction Site Security Plan for the construction phase shall be prepared and made available to the CPM for review and approval. The Construction Security Plan shall include the following:

1. perimeter security consisting of fencing enclosing the construction area;

2. security guards;

3. site access control consisting of a check-in procedure or tag system for construction personnel and visitors;

4. written standard procedures for employees, contractors and vendors when encountering suspicious objects or packages on site or off site;

5. protocol for contacting law enforcement and the CPM in the event of suspicious activity or emergency; and

6. Evacuation procedures.

Verification: At least thirty (30) days prior to commencing construction, the project owner shall notify the CPM that a site-specific Construction Security Plan is available for review and approval.

HAZ-8 The project owner shall also prepare a site-specific security plan for the commissioning and operational phases that will be available to the CPM for review and approval. The project owner shall implement site security measures that address physical site security and hazardous materials storage. The level of security to be implemented shall not be less than that described below (as per NERC 2002).

The Operation Security Plan shall include the following:

1. permanent full perimeter fence or wall, at least eight feet high;

2. main entrance security gate, either hand operated or motorized;

3. evacuation procedures;

4. protocol for contacting law enforcement and the CPM in the event of suspicious activity or emergency;

5. written standard procedures for employees, contractors, and vendors when encountering suspicious objects or packages on site or off site;

6. A. a statement (refer to sample, **Attachment A**), signed by the project owner certifying that background investigations have been conducted on all project personnel. Background investigations shall be restricted to determine the accuracy of employee identity and employment history and shall be conducted in accordance with state and federal laws regarding security and privacy;

   B. a statement(s) (refer to sample, **Attachment B**), signed by the contractor or authorized representative(s) for any permanent contractors or other technical contractors (as determined by the CPM after consultation with the project owner), that are present at any time on the site to repair, maintain, investigate, or conduct any other technical duties involving critical components (as determined by the

CPM after consultation with the project owner) certifying that background investigations have been conducted on contractors who visit the project site;

7. site access controls for employees, contractors, vendors, and visitors;

8. a statement(s) (refer to sample, **Attachment C**), signed by the owners or authorized representative of hazardous materials transport vendors, certifying that they have prepared and implemented security plans in compliance with 49 CFR 172.880, and that they have conducted employee background investigations in accordance with 49 CFR Part 1572, subparts A and B;

9. closed circuit TV (CCTV) monitoring system, recordable, and viewable in the power plant control room and security station (if separate from the control room) or from a remote location capable of viewing, at a minimum, the main entrance gate and the ammonia storage tank; and

10. additional measures to ensure adequate perimeter security consisting of either:

    A. security guard(s) present 24 hours per day, 7 days per week; OR

    B. power plant personnel on site or at a remote location 24 hours per day, seven days per week, and ALL of the following:

        (1) the CCTV monitoring system required in item 9, above, shall include cameras able to pan, tilt, and zoom; that have low-light capability, are recordable, and are able to view 100% of the perimeter fence, the ammonia storage tank, the outside entrance to the control room, and the front gate from a monitor in the power plant control room; AND

        (2) perimeter breach detectors OR on-site motion detectors.

The project owner shall fully implement the security plans and obtain CPM approval of any substantive modifications to those security plans. The CPM may authorize modifications to these measures, or may require additional measures such as protective barriers for critical power plant components—transformers, gas lines, and compressors—depending upon circumstances unique to the facility or in response to industry-related standards, security concerns, or additional guidance provided by the U.S. Department of Homeland Security, the U.S. Department of Energy, or the North American Electrical Reliability Council, after consultation with both appropriate law enforcement agencies and the applicant.

Verification: At least thirty (30) days prior to the initial receipt of hazardous materials on site, the project owner shall notify the CPM that a site-specific operations site security plan is available for review and approval. In the annual compliance report, the project owner shall include a statement that all current project employee and appropriate contractor background investigations have been performed, and that

updated certification statements have been appended to the operations security plan. In the annual compliance report, the project owner shall include a statement that the operations security plan includes all current hazardous materials transport vendor certifications for security plans and employee background investigations.

SAMPLE CERTIFICATION (Attachment A)

Affidavit of Compliance for Project Owners

I,

_____

(Name of person signing affidavit)(Title)

do hereby certify that background investigations to ascertain the accuracy of the identity and employment history of all employees of

_____

(Company name)

for employment at

_____

(Project name and location)

have been conducted as required by the California Energy Commission Decision for the above-named project.

_____

(Signature of officer or agent)

Dated this _____ day of _____, 20_____.

THIS AFFIDAVIT OF COMPLIANCE SHALL BE APPENDED TO THE PROJECT SECURITY PLAN AND SHALL BE RETAINED AT ALL TIMES AT THE PROJECT SITE FOR REVIEW BY THE CALIFORNIA ENERGY COMMISSION COMPLIANCE PROJECT MANAGER.

SAMPLE CERTIFICATION (Attachment B)

Affidavit of Compliance for Contractors

I,

_____

(Name of person signing affidavit)(Title)

do hereby certify that background investigations to ascertain the accuracy of the identity and employment history of all employees of

_____

(Company name)

for contract work at

_____

(Project name and location)

have been conducted as required by the California Energy Commission Decision for the above-named project.

_____

(Signature of officer or agent)

Dated this _____ day of _____, 20_____.

THIS AFFIDAVIT OF COMPLIANCE SHALL BE APPENDED TO THE PROJECT SECURITY PLAN AND SHALL BE RETAINED AT ALL TIMES AT THE PROJECT SITE FOR REVIEW BY THE CALIFORNIA ENERGY COMMISSION COMPLIANCE PROJECT MANAGER.

SAMPLE CERTIFICATION (Attachment C)

Affidavit of Compliance for Hazardous Materials Transport Vendors

I,

_____

(Name of person signing affidavit)(Title)

do hereby certify that the below-named company has prepared and implemented security plans in conformity with 49 CFR 172.880 and has conducted employee background investigations in conformity with 49 CFR 172, subparts A and B,

_____

(Company name)

for hazardous materials delivery to

_____

(Project name and location)

as required by the California Energy Commission Decision for the above-named project.

_____

(Signature of officer or agent)

Dated this _____ day of _____, 20 _____.

THIS AFFIDAVIT OF COMPLIANCE SHALL BE APPENDED TO THE PROJECT SECURITY PLAN AND SHALL BE RETAINED AT ALL TIMES AT THE PROJECT SITE FOR REVIEW BY THE CALIFORNIA ENERGY COMMISSION COMPLIANCE PROJECT MANAGER.

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HAZARDOUS MATERIALS APPENDIX A

Basis for Staff's Use of 75 Parts Per Million Ammonia Exposure Criteria

BASIS FOR STAFF'S USE OF 75 PARTS PER MILLION AMMONIA EXPOSURE CRITERIA

Staff uses a health-based airborne concentration of 75 parts per million (PPM) to evaluate the significance of impacts associated with potential accidental releases of ammonia. While this level is not consistent with the 200-ppm level used by the U.S. Environmental Protection Agency and the California Environmental Protection Agency in evaluating such releases pursuant to the Federal Risk Management Program and State Accidental Release Program, it is appropriate for use in staff's analysis of the proposed project. The Federal Risk Management Program and the State Accidental Release Program are administrative programs designed to address emergency planning and ensure that appropriate safety management practices and actions are implemented in response to accidental releases. However, the regulations implementing these programs do not provide clear authority to require design changes or other major changes to a proposed facility. The preface to the Emergency Response Planning Guidelines states that "these values have been derived as planning and emergency response guidelines, not exposure guidelines; they do not contain the safety factors normally incorporated into exposure guidelines. Instead they are estimates, by the committee, of the thresholds above which there would be an unacceptable likelihood of observing the defined effects." It is staff's contention that these values apply to healthy adult individuals and are levels that should not be used to evaluate the acceptability of avoidable exposures for the entire population. While these guidelines are useful in decision making in the event that a release has already occurred (for example, prioritizing evacuations), they are not appropriate for and are not binding on discretionary decisions involving proposed facilities where many options for mitigation are feasible. California Environmental Quality Act requires permitting agencies making discretionary decisions to identify and mitigate potentially significant impacts through feasible changes or alternatives to the proposed project.

Staff has chosen to use the National Research Council's 30-minute Short Term Public Emergency Limit (STPEL) for ammonia to determine the potential for significant impact. This limit is designed to apply to accidental unanticipated releases and subsequent public exposure. Exposure at this level should not result in serious effects but would result in "strong odor, lacrimation, and irritation of the upper respiratory tract (nose and throat), but no incapacitation or prevention of self-rescue." It is staff's opinion that exposures to concentrations above these levels pose significant risk of adverse health impacts on sensitive members of the general public. It is also staff's position that these exposure limits are the best available criteria to use in gauging the significance of public exposures associated with potential accidental releases. It is, further, staff's opinion that these limits constitute an appropriate balance between public protection and mitigation of unlikely events and are useful in focusing mitigation efforts on those release scenarios that pose real potential for serious impacts on the public. Table 1 provides a comparison of the intended use and limitations associated with each of the various criteria that staff considered in arriving at the decision to use the 75-ppm STPEL.

Hazardous Materials Appendix A Table-1
Acute Ammonia Exposure Guidelines

Guideline	Responsible Authority	Applicable Exposed Group	Allowable Exposure Level	Allowable* Duration of Exposures	Potential Toxicity at Guideline Level/Intended Purpose of Guideline
IDLH[2]	NIOSH	Workplace standard used to identify appropriate respiratory protection.	300 ppm	30 minutes	Exposure above this level requires the use of "highly reliable" respiratory protection and poses the risk of death, serious irreversible Injury, or impairment of the ability to escape.
IDLH/10[1]	EPA, NIOSH	Work place standard adjusted for general population factor of 10 for variation in sensitivity	30 ppm	30 minutes	Protects nearly all segments of general population from irreversible effects.
STEL[2]	NIOSH	Adult healthy male workers	35 ppm	15 minutes, 4 times per 8-hour day	No toxicity, including avoidance of irritation.
EEGL[3]	NRC	Adult healthy workers, military personnel	100 ppm	Generally less than 60 minutes	Significant irritation, but no impact on personnel in performance of emergency work; no irreversible health effects in healthy adults. Emergency conditions one-time exposure.
STPEL[4]	NRC	Most members of general population	50 ppm 75 ppm 100 ppm	60 minutes 30 minutes 10 minutes	Significant irritation, but protects nearly all segments of general population from irreversible acute or late effects. One-time accidental exposure.
TWA[2]	NIOSH	Adult healthy male workers	25 ppm	8 hours	No toxicity or irritation on continuous exposure for repeated 8-hour work shifts.
ERPG-2[5]	AIHA	Applicable only to emergency response planning for the general population (evacuation) (not intended as exposure criteria) (see preface attached)	200 ppm	60 minutes	Exposures above this level entail** unacceptable risk of irreversible effects in healthy adult members of the general population (no safety margin).

1) (EPA 1987) 2) (NIOSH 1994) 3) (NRC 1985) 4) (NRC 1972) 5) (AIHA 1989)

* The (NRC 1979), (WHO 1986), and (Henderson and Haggard 1943) all conclude that available data confirm the direct relationship to increases in effect with both increased exposure and increased exposure duration.

** The (NRC 1979) describes a study involving young animals, which suggests greater sensitivity to acute exposure in young animals. The WHO (1986) warned that the young, elderly, asthmatics, those with bronchitis, and those that exercise should also be considered at increased risk based on their demonstrated greater susceptibility to other non-specific irritants.

REFERENCES - HAZARDOUS MATERIALS APPENDIX A TABLE 1

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ABBREVIATIONS - HAZARDOUS MATERIALS APPENDIX A TABLE 1

ACGIH	American Conference of Governmental and Industrial Hygienists
AIHA	American Industrial Hygienists Association
EEGL	Emergency Exposure Guidance Level
EPA	Environmental Protection Agency
ERPG	Emergency Response Planning Guidelines
IDLH	Immediately Dangerous to Life and Health Level
NIOSH	National Institute of Occupational Safety and Health
NRC	National Research Council
STEL	Short Term Exposure Limit
STPEL	Short Term Public Emergency Limit
TLV	Threshold Limit Value
WHO	World Health Organization

HAZARDOUS MATERIALS APPENDIX B

Hazardous Materials Proposed for Use at the Orange Grove Project

Hazardous Materials Appendix B
Hazardous Materials Proposed for Use at the OGP

Material	CAS No.	Application	Hazardous Characteristics	Maximum Quantity On Site
Acetylene	74-86-2	Welding gas	Health: none Physical: flammable	650 cubic feet
Aqueous Ammonia 19% Solution	7664-41-7	NO_X emissions control in SCR	Health: irritation to permanent damage from inhalation, ingestion, and skin contact Physical: reactive, vapor is combustible	10,000 gallons
Chlorine (12% sodium hypochlorite)	8007-59-8	Circulating system biocide	Health: skin, eye, and lung hazard Physical: corrosive	250 pounds
CO2	124-38-9	Fire suppression	Health: asphyxiant Physical: pressure	100 cubic feet
Compressed Gases: NOx O2 CO	 175876-44-5 80937-33-3 630-08-0	CEMS	Health: Physical: pressure release	1,000 cubic feet
Diesel No. 2	68334-30-5	Fire pump	Health: none Physical: flammable	250 gallons
HFC-134a	811-97-2	Chiller refrigerant	Health: asphyxiant Physical:	5,600 pounds
Hydraulic Oil	Mixture	CTGs start system	Health: none Physical: flammable	100 gallons
Laboratory Reagents (liquid)	Various	Water quality testing	Health: various Physical: various	10 gallons
Laboratory Reagents (solid)	Various	Water quality testing	Health: various Physical: various	50 pounds
Lead Acid Batteries (sealed)	7664-93-9	Emergency fire pump, black-start generator engines; plant uninterruptible power supply	Health: acute and chronic toxicity Physical: reactive and corrosive	
Mineral Insulating Oil (Non PBC)	8012-95-1	Electrical transformers	Health: hazardous if ingested Physical: flammable	12,000 gallons

Material	CAS No.	Application	Hazardous Characteristics	Maximum Quantity On Site
Mineral Lube Oil	99551-14-1	Generator sleeve bearing lubrication and cooling	Health: acute toxicity Physical: corrosive	1,000 gallons
Mineral Lube Oil	99551-14-1	Fuel gas reciprocating compressors bearing and cylinder lubrication and cooling	Health: acute and chronic toxicity Physical: reactive and corrosive	100 gallons
Natural Gas	74-82-8	CTG/Blackstart generator fuel	Health: none Physical: flammable	Pipeline supplies natural gas
Non-RCRA and RCRA Hazardous Waste Solids	Various	Petroleum wastes, sandblast residue, paint residue, oil filters, spent SCR catalyst	Health: toxic Physical: flammable	Small quantity generator
Other Non-Resource Conservation and Recovery Act (RCRA) and RCRA Hazardous Waste Liquids	Various	Waste paint, used or off-spec petroleum products, spent solvent, water with hydrocarbons, spent or off-spec coolant	Health: toxic Physical: flammable and corrosive	Small quantity generator
Proprietary scale/corrosion control made up of: Sodium Tolyltriazole; 2-Phosphono butane-1, 2, 4-Tricarboxylic acid; Sodium poly-acrylate; Poly-phosphate; Sodium hydroxide (product pH control); Water	Various	Circulating system scale and corrosion control	Health: skin, eye, and lung hazard Physical: corrosive	(Mixture) Sodium Tolyltriazole: 100 pounds; 2-Phosphono butane-1, 2, 4-Tricarboxylic acid:100 pounds; Sodium polyacrylate: 100 pounds; Poly-phosphate; 100 pounds; Sodium hydroxide; 100 pounds
Propylene Glycol	57-55-6	Antifreeze for closed cooling water system and in inlet air chillers	Health: chronic toxicity Physical: none	55 gallons

Material	CAS No.	Application	Hazardous Characteristics	Maximum Quantity On Site
Universal Waste	Various	Used batteries, used lamps, cathode ray tubes, electronic equipment, aerosol cans	Health: toxic Physical: flammable	Small quantity handler
Used Oil	8002-05-9	Mechanical equipment	Health: toxic Physical: flammable	165 gallons/6 months
Synthetic Lubricating Oil	1330-78-5	CTGs roller bearing lubrication and cooling	Health: none Physical: flammable	300 gallons
Sulfur Hexaflouride	2551-62-4	Switchyard breakers	Health: asphyxiant Physical: none	66 pounds
Sulfuric Acid 93%	7664-93-9	Circulating system pH control	Health: skin, eye, and lung hazard Physical: corrosive	2,500 pounds (approximately 200 gallons)

Source: TRC2008f Exhibit 48-1

LAND USE

Testimony of Robert Fiore

SUMMARY OF CONCLUSIONS

The proposed Orange Grove project (OGP), with the effective implementation of staff's recommended conditions of certification would be consistent with the applicable laws, ordinances, regulations, and standards (LORS) pertaining to state and local land use planning, and would not generate a significant impact under the "Land Use Planning" and "Agricultural Resources" sections in the California Environmental Quality Act (CEQA) guidelines.

INTRODUCTION

In this section, staff evaluates the proposed project using the "Land Use Planning" and "Agriculture Resources" sections in the CEQA Guidelines to determine if the project would introduce a significant impact under CEQA, and if the project would comply with applicable state and local LORS pertaining to land use planning and agriculture resources.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Land Use Table 1 provides a general description of federal, state and local LORS pertaining to land use planning and agriculture resources relevant to the proposed project site. The project's consistency with these LORS is discussed in **Land Use Table 3**. The project site does not involve federal managed lands; therefore, there are no identified applicable federal land use related LORS affecting the proposed project.

Land Use Table 1
Laws, Ordinances, Regulations, and Standards

Applicable Law	Description
State	**California**
California Land Conservation Act of 1965, SS 51200	Regulates agricultural preserve lands.
Local	**County of San Diego**
General Plan - Regional Land Use Element, Section 2.5	General Agriculture is the subject parcels' land use designation. The Regional Land Use Element (RLUE), Section 2.5 states that General Agriculture land use is "applied to areas where agricultural use is encouraged, protected and facilitated. This designation is intended to facilitate agricultural use as the dominant land use."
General Plan - Regional Land Use Element, Section 1.6	The proposed project site is designated as an Environmentally Constrained Area (ECA) in RLUE Section 1.6. An ECA includes "floodplains, lagoons, areas with construction quality sand deposits, rock quarries, agricultural preserves, areas containing rare and endangered plant and animal species".
General Plan - Conservation Element	Policy 2 in Chapter 6 of the Conservation Plan states that, "the County will analyze, improve and promote methods for preserving agriculture".
General Plan - Conservation Element	"The Conservation Element is for the conservation, development, and utilization of natural resources, including water and its hydraulic force, forests, soils, rivers, and other waters, harbors, fisheries, wildlife, minerals, and other natural resources." The conservation Plan identifies the planning area where the subject site is located as Resource Conservation Area and Unique Geologic Feature.
General Plan - Pala/Pauma Subregional Plan	Policies in this Plan are primarily concerned with urban sprawl and leapfrog development.
The Zoning Ordinance of San Diego County Ordinance No. 5281 (New Series)	Zoning for the proposed OGP site is A72 General Agricultural. Both parcels, APN 110-072-26 and APN 110-370-01, are zoned A72. **Section 2722** lists permitted uses in general agricultural zoning. Energy projects are permitted within this zoning with a Major Use Permit. **Section 2725** lists types of uses that would be permitted upon approval of Major Use Permit findings and includes Major Impact Services and Utilities.
The Zoning Ordinance of San Diego County Ordinance No. 5281 (New Series)	**Section 4200** regulates minimum lot area. According to the County's GIS property profile for APN 110-072-026 the minimum lot area is 10,000 square feet and for APN 110-370-01 the minimum lot area is 40 acres.
The Zoning Ordinance of San Diego County Ordinance No. 5281 (New Series)	**Section 4300** regulates building type. The building type for each parcel is attached and detached.
The Zoning Ordinance of San Diego County Ordinance No. 5281 (New Series)	**Section 4600** regulates building height. The maximum permitted height of buildings for the two parcels is 35 feet and two stories.

Applicable Law	Description
The Zoning Ordinance of San Diego County Ordinance No. 5281 (New Series)	**Section 4620** provides exceptions to height limit restrictions. It states that "any structure for which a Major Use Permit is granted pursuant to other provisions of this ordinance, when the Major Use Permit authorizes an exemption to the height regulations."
The Zoning Ordinance of San Diego County Ordinance No. 5281 (New Series)	**Section 4800** regulates setbacks. The front-yard setback for the two parcels is 60 feet from any abutting public street or private thoroughfare. The interior side-yard setback for the two parcels is 15 feet as measured from the lot line. The exterior side-yard setback for the two parcels is 35 feet as measured from the centerline of the abutting street. The rear-yard setback for the two parcels is 25 feet as measured from the rear lot line. Where a rear yard opens onto an alley, public park, or other permanent open space, 1/2 of the width of such alley, public park, or other permanent open space, may be considered as applying to the rear yard setback to the extent of not more than 50% of the required rear yard setback.
The Zoning Ordinance of San Diego County Ordinance No. 5281 (New Series)	**Section 5100** regulates Agricultural Preserve Area (APA). The two parcels have an Agricultural Preserve Area special regulation according the County's GIS property profile. **Section 5110** provides additional use permit findings for APA parcels.
The Zoning Ordinance of San Diego County Ordinance No. 5281 (New Series)	**Section 5500** regulates Flood Plain Area (FPA). The two parcels are partially designated as FPA special regulation according to the County's GIS property profile. Buildings on such designated properties must be engineered to minimize impacts from flooding and stormwater runoff.
The Zoning Ordinance of San Diego County Ordinance No. 5281 (New Series)	**Section 6300** regulates commercial and industrial outdoor lighting.
The Zoning Ordinance of San Diego County Ordinance No. 5281 (New Series)	**Section 6700** regulates fences, walls, screening and landscaping.
The Zoning Ordinance of San Diego County Ordinance No. 5281 (New Series)	**Section 6750** regulates parking.
The Zoning Ordinance of San Diego County Ordinance No. 5281 (New Series)	**Section 6800** regulates enclosures. Enclosure means the degree that the storage and display of goods may be open and/or visible from public rights-of-way.
The Zoning Ordinance of San Diego County Ordinance No. 5281 (New Series)	**Section 6200 & 6250** regulates signs.
The Zoning Ordinance of San Diego County Ordinance No. 5281 (New Series)	**Section 7350** provides use permit procedures.

SETTING

The subject site for the proposed OGP is a former citrus grove. It is located in northern San Diego County between Interstate 15 (I15) and the community of Pala on State Route 76 (SR 76), Pala Road. This proposed project site is approximately 55 acres though the building footprint is proposed to occupy approximately 8.5 acres.

Major landform features include the San Luis Rey River and a significant ridgeline west of the proposed project site. The north side of the San Luis Rey River Valley, within the vicinity of the project site, has experienced human encroachment. This valley has been impacted by humans as evidenced by the former dairy farms, former agricultural uses, former quarry, nursery and sparse residential dwellings within the project vicinity. Also, as evidenced by the closing of nearby dairy farms and likely economic strains of smaller agriculture production (San Diego County General Plan, Conservation Element, Page X-76), this area appears increasingly less productive. In addition, SR 76 provides the main route between urban San Diego to the popular casino gaming in Pala.

Northern San Diego County, within the vicinity of the project, exhibits a rural character. It is also characterized by mountainous terrain, many minor ravines and the San Luis Rey River, a County designated Resource Conservation Area. The minor ravines or creeks feed the San Luis Rey River. Where these ravines or creeks join with the San Luis Rey River the land becomes gently sloping. Since the area is mountainous, parcels of quality gently sloping terrain are not common and development is sparse.

Three residential dwellings are within close proximity of the site. Other uses within close proximity of the site include a former mining operation, former dairy farm, nursery and vacant land. There are no major concentrations of population in the region. The unincorporated community of Pala is approximately two miles east of the proposed project site. Residential dwellings are interspersed throughout the region near this site but are not concentrated enough to qualify as communities. Fallbrook is the largest community near the proposed project site, but is approximately eight miles to the west. SR 76 is the major east-west traffic corridor providing regional access to the proposed project site. Approximately four miles west of the proposed project site, Interstate 15 (I 15) is the major north-south traffic route in the region. (See **Land Use Figure 1**)

PROJECT SITE AND VICINITY

The project site is located on two parcels, assessor's parcel numbers (APN) 110-072-26 and (APN) 110-370-01, that encompass 55 acres. APN 110-072-26 encompasses approximately 41 acres and APN 110-370-01 encompasses 14 acres.

OGP proposes leasing approximately eight acres of the 55 acres for the power plant facilities (see **Land Use Figure 2**). Of the eight acre leased area, power plant project facilities are proposed to be sited on the larger of the two parcels. Project ancillary uses, such as parking, are proposed on the contiguous smaller parcel. A storage yard and a San Diego Gas & Electric (SDG&E) sub-station currently occupy the smaller parcel. Parking would be located between the storage yard and the power plant facilities. Pala Del Norte Road (private) provides access to the proposed project and transects the smaller parcel and is located near the western boundary of the larger parcel.

The leased eight acre power plant facility site exhibits a gently sloping terrain with elevations near 450 feet on the north and near 375 feet on the south. There is virtually no slope east to west. Surrounding landforms exhibit steeper slopes unlike the fairly level proposed project site. A large portion of the 55 acre proposed project site was cultivated as a citrus orchard (see **Land Use Figure 3**).

According to the applicant, SDG&E owns the subject parcels and the large parcels to the west of the subject site. Orange Grove Energy, L.P. (OGE) will lease the 8.5-acre portion of the proposed project site from SDG&E.

There is an existing substation and storage yard located on the smaller parcel of the proposed project site. Other existing facilities close to the project site include a SDG&E 230-kV transmission line that traverses the region, north and south, approximately a quarter mile to the east of the subject property. A SDG&E 69-kV transmission line extends from the substation along SR 76 and then heads south adjacent to the 230-kV transmission line. The proposed transmission interconnection line would connect the substation and power plant and the proposed natural gas pipeline would traverse alongside SR 76. Land uses along the proposed transmission and pipeline corridors are characterized by sparse residential development, a major transportation corridor, former agricultural farming and dairies and former quarry.

COMPATIBILITY WITH EXISTING SURROUNDING LAND USES

Land Use-Table 2 is provided to more easily assess compatibility with surrounding land uses and zoning. The major surrounding land uses, include two former dairies approximately one mile to the southwest, a former gravel quarry directly to the south, a nursery to the east and three residential dwellings approximately a half mile north of the proposed project site. Also, SR 76 east-west arterial is a major arterial that borders the southeastern boundary of the subject project site.

The proposed project is not consistent with the San Diego County General Plan (SDGP) designations north, east and west of the proposed project site but is consistent with the zoning surrounding the proposed site, which permits Major Impact Services and Utilities by Major Use Permit. The proposed project is compatible with some existing uses but is not compatible with other existing uses. The former quarry may be considered a compatible use because of the physical landform changes to the area and that the former dairies have structures comparable in scale, bulk, coverage and intensity.

The vacant land adjacent to the north and west currently presents an incompatibility with respect to inconsistency in uses, not in scale, size, color, architectural design, etc. Vacant parcels and the proposed new facility would be inconsistent in development pattern because it introduces a use not previously established on adjacent parcels. The proposed power plant would introduce a new use not previously established on the subject site or adjacent parcels to the residential dwellings approximately a half mile north of the site and to passersby's. In addition, a commercial recreational facility is located ¾ of a mile southeast of the proposed project site. This recreation facility will not be impacted with respect to land use planning considerations.

However, the Gregory Canyon Landfill is a future land use adjacent to the site that would present compatibility with the proposed power plant. In addition, the subject parcels for the OGP and parcels proposed for the Gregory Canyon Landfill are designated as Public/ Semi-Public Facilities on the General Plan Update Maps, published on the San Diego County Department of Planning and Land Use web-site. Both the Gregory Canyon Landfill, proposed for adjacent parcels, together with the proposed Public/ Semi-Public Facilities land use designation by the SDGP Update may indicate that the proposed project site will be well suited for the proposed power plant.

Determining compatibility with adjacent uses includes evaluating and assessing potential significant impacts with respect to noise, air quality, visual resources, etc. A project may generate a potential significant environment impact related to land use if it would introduce an unmitigated air quality, noise, public health hazard, or water supply affect on surrounding properties. A project's land use compatibility is not limited to the "land use" technical section of the Staff Assessment, but applies to multiple technical sections within the SA and is better addressed under those specific sections. For a more detailed discussion, see the **AIR QUALITY**, **NOISE AND VIBRATION**, **PUBLIC HEALTH**, **VISUAL RESOURCES** and **SOIL AND WATER RESOURCES** sections in this Staff Analysis (SA).

Land Use Table 2
Vicinity Land Use and Zoning

Parcel[1]	Direction	Acres	General Plan Land Use	Zoning	Existing Use
110-072-26	Subject Site	41	General Agriculture	A72[2]	vacant and former orchard
110-370-01	Subject Site	14	General Agriculture	A72	storage and substation
110-072-17	North of Site	109	Multiple Rural Use	A70[3]	vacant with three residences approximately 1/2 mile north
110-072-28&30	East of Site	11/2	General Agriculture	A72	vacant
110-072-31&27	East of Site	7/.5	Impact sensitive	A72	vacant
110-370-02,03,04&05	East of Site	.7/.9/2/4	Impact sensitive	A72	former quarry
110-150-25	South of Site	187	Public/ Semi-Public Lands	SWF[4]	former quarry
110-150-02	West of Site	89	Multiple Rural Use	A70	vacant
110-072-06	West of Site	43	Multiple Rural Use	A70	vacant
Transmission Interconnection & Gas Pipeline	Subject Site & Surrounding		General Agriculture, Public/ Semi-Public Lands, Multiple Rural Use	A70, A72 & SWF	vacant, ROW, former dairy, former farming
Reclaimed Water Pickup	Subject Site & Surrounding	43	Public/ Semi-Public Lands	A70	wastewater treatment plant-residential subdivisions
Fresh Water Pickup	Subject Site & Surrounding	9	Estate Residential	A70	vacant- rural residential

1. Parcels listed clockwise around subject parcels and if same assessors book and page, multiple lot numbers listed in row
2. General Agricultural, preserve areas for crops and animal raising - production and processing
3. Limited Agricultural, preserve areas for crops - minor processing
4. Solid Waste Facility

Sources:
1. Acres were obtained from assessor maps contained in Appendix 1-A, OGP AFC 2008.
2. Parcel, land use and zoning was obtained from the County of San Diego GIS mapping application.
3. Existing use information was obtained from the OGP AFC, Figures 6.9-4A, 6.9-4B and 6.9-4C.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

To determine whether there is a potentially significant land use impact generated by a proposed project, staff reviewed the project using the 2008 CEQA Guidelines

Appendix G Environmental Checklist pertaining to “Land Use and Planning.” The checklist questions include the following:

A. Would the project physically divide an established community?

B. Would the project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

C. Would the project conflict with any applicable habitat conservation plan or natural community conservation plan?

To determine whether there is a potentially significant agriculture resources impact generated by a proposed project, staff reviewed the 2008 CEQA Guidelines Appendix G Environmental Checklist pertaining to “Agriculture Resources.” In making this determination, staff used the California Agricultural Land Evaluation and Site Assessment (LESA) Model prepared by the California Department of Conservation to help address the following checklist questions:

A. Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

B. Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

C. Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?

A project may also generate a potential significant environmental impact related to land use if it would introduce an unmitigated air quality, noise, public health hazard, or water supply affect on surrounding properties. See the **AIR QUALITY**, **NOISE**, **PUBLIC HEALTH**, and **SOIL AND WATER RESOURCES** sections of the SA for a detailed discussion of potential project impacts and mitigation.

DIRECT/INDIRECT IMPACTS AND MITIGATION

The impact discussion is presented under the following two CEQA headings; Land Use Planning and Agriculture Resources. The CEQA checklist questions have been presented in bold.

LAND USE PLANNING

A. Would the project physically divide an established community?

The proposed project would not physically divide an established community. The community of Pala is the closest established community. It is approximately two miles east from the site. Pala is part of the larger Pala Indian Reservation. The proposed project site is approximately one mile to the west of the Pala Indian

Reservation boundary. Since, the proposed project site is outside of this boundary it would not divide this community.

The proposed project would generate a less than significant environmental impact regarding this matter.

B. Would the project conflict with any applicable land use plan, policy or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect?

California Government Code, Title 5, Division 1, Part 1, Chapter 7, California Land Conservation Act (CLCA) of 1965 (aka Williamson Act)

The purpose of this statute is to regulate and conserve agricultural land. California Land Conservation Act (CLCA), Section 51231, empowers the local government to establish and administer agricultural preserves. Agricultural preserve is defined by CLCA, Section 51201 (d), as "an area devoted to either agricultural use…in accordance with the provisions of this chapter."

Compatible use is defined by CLCA, Section 51201 (e), and states:

> *Compatible use is any use determined by the county or city administering the preserve pursuant to Section 51231, 51238, or 51238.1 or by this act to be compatible with the agricultural, recreational, or open-space use of land within the preserve and subject to contract. Compatible use includes agricultural use, recreational use or open-space use unless the board or council finds after notice and hearing that the use is not compatible with the agricultural, recreational or open-space use to which the land is restricted by contract pursuant to this chapter.*

In AFC Section 6.9.3.2, the applicant states that the proposed project complies with the CLCA, Section 51238 (a) (1), regarding compatibility. CLCA, Section 51238 (a) (1), states:

> *Notwithstanding any determination of compatible uses by the county or city pursuant to this article, unless the board or council after notice and hearing makes a finding to the contrary, the erection, construction, alteration, or maintenance of gas, electric, water, communication, or agricultural laborer housing facilities are hereby determined to be compatible uses within any agricultural preserve. It is further stated in CLCA, Section 51238 (b), "the board of supervisors may impose conditions on lands or land uses to be placed within preserves to permit and encourage compatible uses in conformity with Section 51238.1, particularly public outdoor recreational uses.*

The discussion pertaining to CLCA presented above is to help determine whether the proposed project would conflict with any land use planning policy for the purposes of avoiding or mitigating an environmental effect. CLCA is applicable to the proposed project because the San Diego County Zoning Ordinance provides a special Agricultural Preserve Area (APA) overlay for the subject parcels. County Zoning Ordinance, Section 5100, states that the purpose of the APA is to aid the implementation of the CLCA, pursuant to Section 51201 (d). The APA is an overlay

for the zoning district established by the County to comply with the CLCA as a means of identifying significant agricultural parcels that may qualify as contracted lands.

Since the proposed project site is an Agricultural Preserve by zoning, it is consistent with CLCA, Section 51201 (d). Consequently, the APA zoning overlay requires findings for uses within an Agricultural Preserve. Compatibility is one of the findings required for an APA. CLCA, Section 51201 (e), definition of compatible use and CLCA, Section 51238 (a) (1), determination of compatible use, is presented above for the Energy Commission's consideration because a finding of compatibility cannot be made except as provided by CLCA, Section 51238 (a) (1). Otherwise, the project would conflict with agricultural preserve policy because the proposed project is currently incompatible with adjacent uses.

Energy Commission staff considered the following two factors in determining that "electrical facility", as cited in Section 51238 (a) (1), includes power plants, making the proposed project compatible with adjacent uses:

1. The County of San Diego, Department of Planning and Land Use, prepared a letter dated December 13, 2007, in response to the Energy Commission's standard request for local government input. The County's letter states that the "the proposed project is compatible with the Agricultural Preserve (Pala #15)."

2. Major Impact Services and Utilities are permitted in the zoning district by Major Use Permit and are consistent with the County's General Plan.

County of San Diego Zoning Ordinance

Zoning for the subject parcels is A72, General Agricultural. Major Impact Services and Utilities are permitted within the A72 zoning district with the approval of a Major Use Permit (MUP). In addition, the subject parcels have an APA overlay so the project requires findings for MUP and APA. MUP findings are discussed in the **LORS Compliance** discussion contained in this Land Use Planning Analysis. Zoning and use permits are not land use policies for the purposes of avoiding or mitigating an environmental effect. However, the APA zoning overlay is a land use planning policy for the purposes of avoiding or mitigating an environmental effect.

Agricultural Preserve Area Regulations are found in Section 5100 of the County's Zoning Ordinance. As discussed above, the purpose of the APA is to "aid in the implementation of the California Land Conservation Act of 1965 (Government Code Sec. 51200 et seq.), intended to encourage the preservation of productive agricultural lands." It further states in Section 5102 of the County's Zoning Ordinance,

> *An agricultural preserve designator shall be applied to those lands in the County of San Diego which are subject to agricultural use regulations or the Use Regulations and which have been designated as being within an agricultural preserve in accordance with the California Land Conservation Act of 1965.*

Section 5105 of the San Diego County Zoning Ordinance establishes restrictions on uses for APA designated lands as follows:

b. Lands Not Under Contract. The uses of land not subject to a Land Conservation Act contract shall be as set forth in the applicable use regulations (A72, zoning) except that:

    1. All uses subject to a minor use permit or a major use permit shall be approved only if a finding is made that the use complies with the provisions of Section 5110.

According to the APA regulations, the proposed project's parcels are subject to the Use Regulations of the CLCA and Zoning Ordinance. The use, therefore, must comply with the findings of the APA and MUP.

The County of San Diego, Department of Planning and Land Use, prepared a letter dated December 13, 2007, in response to the Energy Commission's standard request for local government input. The letter states that the "the proposed project requires findings for APA."

The findings required for the APA are found in Section 5110 of the San Diego County Zoning Ordinance as follows:

A. State Statute. The proposed use complies with all provisions of the California Land Conservation Act of 1965; and

B. Compatibility with Agricultural Use. The proposed use would not be incompatible with the continued agricultural use of any land within the agricultural preserve. This determination shall Include a consideration of the following:

    1. Possible increase In vandalism;

    2. Possible damage from pets;

    3. Possibility that use will lead to restrictions on agricultural spraying, noise or smell; and

    4. Possible Interference with the movement of farm machinery or agricultural products.

The Energy Commission must adopt the following APA findings to permit the proposed power plant use:

A. With respect to compliance with all the provisions of California Land Conservation Act (CLCA, Williamson Act), a power plant does not meet the intent and purpose of the CLCA with respect to agricultural preservation and conservation, except as provided by CLCA, Section 51238 (a) (1).

B. With respect to compatibility of continued agricultural use, the proposed project is compatible with the continued agricultural use of lands within the agricultural preserve based on the following:

1. The subject site is in a California Department of Conservation mapped Farmland of Statewide Importance. As discussed herein, **Agricultural Resources**, the proposed project site parcels are less than suitable for agricultural use.

2. Continued agricultural use in the Agricultural Preserve is not likely considering that the SDGP Update (proposed but not adopted) depicts the property as Public/ Semi-Public Facilities on the SDGP Update Maps published on the County's web site. In addition, the Gregory Canyon Landfill is proposed on one adjacent parcel and for a large area within the vicinity of the project.

3. The proposed project is located in a rural area and an increase in vandalism is not likely, damage from pets is unlikely since the proposed project is non-residential, agricultural spraying is not proposed and will not interfere with the movement of farm machinery or agricultural products.

The Energy Commission must also adopt the MUP findings, contained in the **LORS Compliance** discussion to fully comply with the APA regulations.

The proposed project would generate a less than significant environmental impact because, Energy Commission staff considered the following two factors in determining "electrical facility", as cited in Section 51238 (a) (1), includes power plants making the proposed project compatible with adjacent uses:

1. The County of San Diego, Department of Planning and Land Use, prepared a letter dated December 13, 2007, in response to the Energy Commission's standard request for local government input. The County's letter states that the "the proposed project is compatible with the Agricultural Preserve (Pala #15)."

2. Major Impact Services and Utilities are permitted in the zoning district by Major Use Permit and are consistent with the SDGP.

The required APA and MUP findings are provided herein.

C. Would the project conflict with any applicable habitat conservation plan or natural community conservation plan?

The proposed project may conflict with a habitat conservation plan or natural community conservation plan pertaining to land use planning. The project falls under the jurisdiction of the North County Community Conservation Plan and Multiple Species Conservation Program. The Plan and Program are not land use planning policy documents but are biological resource documents. Consistency with the Plan and Program is further discussed in the **BIOLOGICAL RESOURCES** section of the Staff Analysis.

AGRICULTURE RESOURCES

CEQA guidelines allow a lead agency the option of using the Important Farmland Maps prepared by California Department of Conservation (CDC) or the LESA (California Agricultural Land Evaluation and Site Assessment Model) to determine the level of

significance for agricultural environmental impact. Energy Commission staff consulted CDC Important Farmland Maps as a means to identify whether the proposed project would impact important farmlands. Project facilities would be located on lands designated as Farmlands of Local Importance by CDC.

Since the proposed project site is designated as Farmlands of Local Importance, Energy Commission staff used the LESA Model to help determine significant environmental effects to agriculture resources potentially caused by the proposed project. The LESA Model was developed to provide lead agencies with an optional method to ensure that potentially significant effects of agricultural land conversions are quantitatively and consistently considered in the environmental review process (Public Resources Code, section 21095). The LESA Model was used to address the CEQA checklist questions bolded below.

The LESA Model is composed of six different factors. Two “Land Evaluation” factors are based upon measures of soil resource quality. Four “Site Assessment” factors provide measures of a given project’s size, water resource availability, surrounding agricultural lands, and surrounding protected resource lands. For a given project, each of these factors is separately rated on a 100 point scale. The factors are then weighted relative to one another and combined, resulting in a single numeric score for a given project, with a maximum attainable score of 100 points. It is this project score that becomes the basis for making a determination of a project’s potential significance, based upon a range of established scoring thresholds.

A. Would the project convert prime farmland, unique farmland, or farmland of statewide importance (farmland), as shown on the maps prepared pursuant to the farmland mapping and monitoring program of the California Resources Agency, to non-agricultural use?

A portion of the 55-acre proposed project site is mapped by the California Department of Conservation (CDC), Farmland Mapping and Monitoring Program as “Farmland of Local Importance” (CDC 2006) (see **Land Use Figure 4**). In addition, the County has placed a special regulation “A”, Agricultural Preserve Area designator on the two subject parcels.

Sustainability is a growing concern for most communities. In determining agricultural resource significance for this project site the LESA Model is a worthy option because the proposed project site is a Farmland of Local Importance, though not considered a Farmland of Statewide Importance (CDC 2006, San Diego County Important Farmland Map).

Staff completed a LESA Model worksheet for the 55 acre project site (see **APPENDIX LU-1**) to determine the level of significant impact if the subject parcel is taken out of agricultural land use. To conduct analysis of impacts, the following governmental resources were consulted or used to complete the LESA Model Worksheet:

1. United States Department of Agriculture (USDA), Natural Resources Conservation Service Web Soil Survey, 2008 (http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx)

The Web Soil Survey mapped the types of soils for the site.

2. USDA Soil Survey for San Diego, California, 1973

   The Soil Survey report was consulted to determine the land capability level and Storie Index.

3. California Department of Conservation (CDC), Farmland Mapping and Monitoring Program

   The Important Farmland Map for San Diego maps portions of the subject parcels as Farmland of Local Importance

   The LESA Model score generated for the project's potential conversion of 55 acres was 23.99 points. A score of 0 to 39 points is not considered significant as shown on Table 9 California Agricultural LESA Model, Instruction Manual, Section IV Scoring Thresholds – Making Determinations of Significance Under CEQA.

   The proposed project's conversion of 55 acres would generate a less than significant impact.

B. Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

The proposed project site is zoned A72, General Agricultural, by the county of San Diego. The project site is surrounded by property with A70, Limited Agricultural, A72, General Agricultural, and Solid Waste Facility (SWF) zoning **(see Land Use Table 2**).

The purpose of discussing the County's Zoning Ordinance is to determine whether the project would conflict with existing zoning for agricultural use. Major Impact Services and Utilities are permitted with the approval of a Major Use Permit (see LORS Compliance contained herein below). An Agricultural Preserve Area (APA) overlay is associated with the zoning for the subject site and parcels east of the site. The APA regulates agricultural use.

Zoning Ordinance Use Regulations

The A70 Use Regulations are intended to create and preserve areas intended primarily for agricultural crop production. Additionally, a limited number of small farm animals may be kept and agricultural products raised on the premises may be processed.

The A72 Use Regulations are intended to create and preserve areas for the raising of crops and animals. Processing of products produced or raised on the premises would be permitted as would certain commercial activities associated with crop and livestock production. Typically, the A72 Use Regulations would be applied to areas distant from large urban centers where the dust, odor, and noise of agricultural operations would not interfere with urban uses, and where urban development would not encroach on agricultural uses.

The purpose of the APA is to aid in the implementation of the California Land Conservation Act of 1965 (Government Code Sec. 51200 et seq.), intended to encourage the preservation of productive agricultural lands.

Land Use Table-2 lists zoning and uses surrounding the subject site. The proposed project conflicts with existing zoning for the subject site and surrounding parcels. Though the subject site and surrounding parcels' zoning permit Major Impact Services and Utilities by MUP, it conflicts with the zoning for agricultural use and APA overlay for the subject site and the parcels to the east of the subject site.

The 55-acre parcel is not affected by an executed Williamson Act contract.

Energy Commission staff considered the following two factors in determining "electrical facility", as cited in Section 51238 (a) (1), includes power plants making the proposed project compatible with adjacent uses:

1. The County of San Diego, Department of Planning and Land Use, prepared a letter dated December 13, 2007, in response to the Energy Commission's standard request for local government input. The County's letter states that the "the proposed project is compatible with the Agricultural Preserve (Pala #15)."

2. Major Impact Services and Utilities are permitted in the zoning district by Major Use Permit and are consistent with the County's General Plan.

The required APA and MUP findings are provided herein.

The proposed project's conversion of 55 acres would generate a less than significant impact

C. Would the project involve other changes in the existing environment which, due to their location or nature could result in conversion of farmland, to non-agricultural use?

The proposed transmission line interconnection would begin at the power plant, exits the project site via the main access driveway and then follows Pala Del Norte Road to the existing substation. Since there is an existing road that the transmission interconnection line will follow, anticipated impacts are minimal.

According to the Application for Certification (AFC), the proposed project's natural gas pipeline would extend from the project site to an existing main natural gas transmission line at Rice Canyon Road and SR 76 and parallels SR 76. The proposed natural gas pipeline traverses along Pala Del Norte Road, vacant hillsides, two former dairy sites and the existing SR 76 right-of-way (ROW). Similar to the transmission line interconnection, the proposed natural gas pipeline follows Pala Del Norte Road to the substations then it exits the proposed project site and follows the existing SR 76 ROW for a short distance. It exits SR 76 ROW and traverses west through vacant hillside along contours and existing unpaved roads. This vacant hillside land is not mapped as agricultural lands of importance by the Department of Conservation (CDC, 2006). The proposed natural gas

pipeline then traverses west along SR 76 ROW to the connection point at Rice Canyon Road. For approximately ¼ of a mile this pipeline would be adjacent to lands mapped as Prime Farmland by the CDC and under Williamson Act contracts, however, the pipeline is proposed to be placed underground in existing ROW. According to the AFC, Agriculture and Soils Section, the vegetation, primarily grass species and coastal sage scrubs, will be removed and soil will be manipulated. Upon construction completion, disturbed areas will be reseeded with native grasses and coastal sage scrubs. (AFC, Page 6.4-8)

The County has placed a special regulation APA designator on many of the parcels along the proposed natural gas pipeline route. An APA designator was not placed on the parcels where the pipeline traverses the vacant hillside. The vacant hillside is the only significant land parcel that the proposed natural gas pipeline traverses outside of existing ROW. Though the “A” designator is assigned to all other parcels where the natural gas pipeline would traverse, these lands have been disturbed by SR 76 ROW or traverses parcels where significant human disturbance has occurred.

The reclaimed water pick-up station is located on an existing wastewater treatment facility. In light of the existing use, this parcel does not exhibit agricultural significant qualities.

The fresh water pick up station is located in between two roadways and is not on lands mapped as important farmlands by CDC. Though the parcels to the south of this proposed site are mapped as Farmland of Local importance and soil types qualify as Farmland of Statewide Importance (AFC, Section 6.4), surrounding land use patterns and existing roadways reduces the feasibility for significant agricultural value, especially considering a waterline easement and an unpaved roadway transect the site.

The proposed project would generate a less than significant environmental impact regarding this matter.

CUMULATIVE IMPACTS AND MITIGATION

As defined in Section 15355 of the CEQA Guidelines (California Code of Regulations, Title 14), a cumulative impact is created as a result of the combination of the project under consideration together with other existing or reasonably foreseeable projects causing related impacts. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.

Staff has considered the proposed project’s incremental effect together with other closely related past, present, and reasonably foreseeable future projects whose impacts may compound or increase the incremental effect of the proposed project (Pub. Resources Code section 21083; Cal. Code Regs., tit.14, sections 15064(h), 15065(c), 15130, and 15355.)

The area of concern for planning purposes can be more precisely defined as the area along the proposed natural gas pipeline corridor and the San Luis Rey River valley from

Rice Canyon Road to the Pala Indian reservation. Projects outside of the projects' sphere-of-influence (within one mile from the proposed site and ¼ of a mile from the proposed gas pipeline) are not considered for purposes of determining cumulative impacts. There are no planned projects or proposed General Plan, Specific Plan or Zoning changes within the planning area of concern. Cumulative impacts related to traffic, noise, visual resources, biological resources, etc. are evaluated in the relevant sections of the SA.

The proposed project is not expected to make a significant contribution to regional impacts related to new development and growth (population immigration), and the resultant increase demand for public services, and expansion of public infrastructure.

Staff has reviewed Census 2000 information (maps) that show there is a minority population of greater than 50% within a six-mile radius of the proposed project site but not a low-income population of greater than 50% within a six-mile radius of the proposed project site (see **SOCIOECONOMICS** section of this SA and **Socioeconomics Figure 1**). Staff found no potential significant adverse impacts related to land use planning and agriculture resources. The proposed project does not introduce a significant land use planning or agriculture resources impact related to an environmental justice issue.

COMPLIANCE WITH LORS

Land Use Table 3 (below) provides a summary description of the applicable state and local LORS and the proposed project's consistency with these LORS. Conditions of Certification are proposed to make a project conform to LORS where appropriate. This section focuses on LORS requiring more extensive discussion regarding basis for compatibility.

CALIFORNIA GOVERNMENT CODE, TITLE 5, DIVISION 1, PART 2, CHAPTER 5, LOCAL GOVERNMENT REORGANIZATION ACT

The purpose of this statute is to regulate orderly growth and development and regulates the formation, reorganization and annexation of local government and special district boundaries. It is referred to in the AFC in the Land Use Section 6.9. Typically, the Local Government Reorganization Act is a land use planning matter however, due to the type of project and emergency services issues, the matter is discussed further in the **WORKER SAFETY AND FIRE SAFETY SECTION** of the SA.

CALIFORNIA GOVERNMENT CODE, TITLE 5, DIVISION 1, PART 1, CHAPTER 7, CALIFORNIA LAND CONSERVATION ACT (CLCA) OF 1965 (AKA WILLIAMSON ACT)

The purpose of this statute is to regulate and conserve agricultural land. The CLCA, Section 51231, empowers the local government to establish and administer agricultural preserves. Agricultural preserve is defined by CLCA, Section 51201 (d), as "an area devoted to either agricultural use, as defined in subdivision (b), recreational use as defined in subdivision (n), or open-space use as defined in subdivision (o), or any combination of those uses and which is established in accordance with the provisions of this chapter."

In addition, the County of San Diego, Department of Planning and Land Use, prepared a letter dated December 13, 2007, in response to the Energy Commission's standard request for local government input. The letter states that the "the proposed project is compatible with the Agricultural Preserve (Pala #15)." Since Major Impact Services and Utilities are permitted in the zoning district by Major Use Permit and the County states that the project is "compatible" then the Energy Commission must determine whether a power plant falls under the definition of electrical facility as cited in CLCA, Section 51238 (a) (1).

Since the proposed project site is an Agricultural Preserve by zoning, it is consistent with CLCA, Section 51201 (d). Consequently, the APA zoning overlay requires findings for uses within an Agricultural Preserve. Compatibility is one of the findings required for an APA. CLCA, Section 51201 (e), definition of compatible use and CLCA, Section 51238 (a) (1), determination of compatible use, is presented above for the Energy Commission's consideration because a finding of compatibility cannot be made except as provided by CLCA, Section 51238 (a) (1). The proposed project is compatible with adjacent uses based on the following:

1. The County of San Diego, Department of Planning and Land Use, prepared a letter dated December 13, 2007, in response to the Energy Commission's standard request for local government input. The County's letter states that the "the proposed project is compatible with the Agricultural Preserve (Pala #15)."

2. Major Impact Services and Utilities are permitted in the zoning district by Major Use Permit and are consistent with the SDGP.

GENERAL AGRICULTURE LAND USE DESIGNATION

The proposed site for the OGP includes two parcels. The San Diego County APN's for these two parcels are 110-072-26 and 110-370-01. Both parcels are designated by the County's General Plan Regional Land Use Element, Section 2.5 as (20) General Agriculture. The County's (20) General Agriculture land use designation's purpose is to protect agricultural and supportive agricultural uses compatible with adjacent land uses.

The proposed project would not conflict with the SDGP designation for the subject parcels. According to the General Plan Regional Land Use Element Compatibility Matrix, page II-50, A70 and A72 zoning is consistent with the (20) General Agriculture land use designation.

SAN DIEGO COUNTY GENERAL PLAN CONSERVATION ELEMENT POLICIES

The Conservation Element does not contain prohibitive land use planning policies. Consequently, the proposed project does not conflict with the policies of the San Diego County General Plan Conservation Element regarding land use planning. Policies of the Conservation Element are provided to ensure the protection, conservation and utilization of resources within this special planning area. If not for the exclusive authority of the Energy Commission, the County would be required to implement the policies of the Conservation Element.

Chapter 1 in the Conservation Element refers to the San Luis Rey River as a Resource Conservation Area (RCA) for Bonsall. Bonsall is an area in unincorporated San Diego County where the subject site is located. An RCA is a land use planning area of special concern. The Conservation Element implements policies pertaining to Water, Vegetation and Wildlife Habitat, Minerals, Soils, Astronomical Dark Sky and Cultural Resources and are not land use regulatory planning policies but are important to implement through conditions to ensure resource protection, etc. The Plan states, “this overlay identifies lands requiring special attention in order to conserve resources in a manner best satisfying public and private objectives. The appropriate implementation actions will vary depending upon the conservation objectives of each resource but may include scenic or natural resource preservation overlay zones. Resource conservation areas shall include but are not limited to groundwater problem areas, coastal wetlands, native wildlife habitats, construction quality sand areas, littoral sand areas, astronomical dark sky areas, unique geological formations, and significant archaeological and historical sites.” Implementing policies pertain to Water, Vegetation and Wildlife Habitat, Minerals, Soils, Astronomical Dark Sky and Cultural Resources and are not land use regulatory planning policies.

Chapter 5 of the Conservation Plan states that, “banks of the San Luis Rey River, a few miles southwest of Pala are within the Unique Geological feature of Indian Mountain Leucogranodiorite. A unique feature may be the best example of its kind locally or regionally, it may illustrate a geologic principle, it may provide a key piece of geologic information, it may by the "type locality" of a fossil or formation, or it may have high aesthetic appeal. Unique geologic features may be exposed or created from natural weathering and erosion processes or from man-made excavations. Again, the implementation of conditions to ensure resource protection, conservation and proper utilization is required in this special planning area.

Since the San Luis River is a Resource Conservation Area, it is important to consider these policies relative to the areas of specialization. Please see the **VISUAL RESOURCES, WATER RESOURCES, BIOLOGICAL RESOURCES, GEOLOGY, SOILS,** and **CULTURAL RESOURCES** sections of the SA.

The propose project does not conflict with the Conservation Plan Chapter 6, Agricultural Policy 2. This policy states “the County will analyze, improve and promote methods for preserving agriculture. “ This Chapter of the Conservation Element and this policy does not contain prohibitive or restrictive land use planning policies.

The Astronomical Dark Sky section of the Conservation Plan is applicable to RCA’s and is augmented by the County Light Pollution Code. Zone A, according to the Code, is a 15-mile radius from either the Palomar Mountain or Mount Laguna Mountain Observatory. Since the project is located in Zone A, project design elements must comply with the County Light Pollution Code. These Code requirements are discussed further in the **VISUAL RESOURCES** section of the SA.

ZONING ORDINANCE

Section 2700 of the San Diego County's Zoning Ordinance established the subject parcels zoning. The current zoning for the subject site is A72, "General Agricultural". Major Impact Services and Utilities are permitted with the approval of a Major Use Permit.

Section 2725 of the County of San Diego Zoning Ordinance lists types of uses that would be permitted upon approval of Major Use Permit findings and includes Major Impact Services and Utilities. Approval of the Major Use Permit is subject to making findings pursuant the Section 7358 of the County's Zoning Ordinance. If not for the exclusive authority of the Energy Commission, the San Diego County Board of Supervisor would be required to prepare the findings to authorize the Major Use Permit.

The findings required for Major Use Permits are as follows:

A. That the location, size, design, and operating characteristics of the proposed use will be compatible with adjacent uses, residents, buildings, or structures, with consideration given to:

   1. Harmony in scale, bulk, coverage and density;

   2. The availability of public facilities, services and utilities;

   3. The harmful effect, if any, upon desirable neighborhood character;

   4. The generation of traffic and the capacity and physical character of surrounding streets;

   5. The suitability of the site for the type and intensity of use or development which is proposed; and to

   6. Any other relevant impact of the proposed use; and

B. The impacts, as described in paragraph "a" of this section, and the location of the proposed use will be consistent with the SAGP,

C. The requirements of the California Environmental Quality Act (CEQA) have been complied with.

Potential Major Use Permit Findings

The Energy Commission must adopt the following findings for the proposed project to be in compliance with applicable LORS.

A. With respect to compatibility with adjacent land uses and giving consideration to scale, bulk, coverage, density, the availability of public facilities, services, utilities and intensity of use the proposed project is not compatible with adjacent land uses. **Land Use Table 2** illustrates adjacent land uses. Adjacent lands are primarily vacant. A large scale project like a power plant is not harmonious in scale, bulk, coverage and intensity with the adjacent vacant land. The proposed project lacks essential public facilities like water and fire service. In addition, an exemption to height limits cannot be granted if the MUP findings cannot be made.

With respect to compatibility with adjacent uses giving consideration to harmful effect, traffic generation, physical character of streets and site suitability the proposed project has limited compatibility with adjacent land uses. The basis for limited compatibility includes:

1. The project is being analyzed for environmental effect and impact on neighborhood character;

2. This sub-region of the San Luis Rey River has experienced human impact, as evidenced by the former quarry and dairies;

3. Minimal traffic generation, roadway capacity and acceptable access;

4. The project can be designed and engineered for the site.

Energy Commission staff considered the following two factors in determining "electrical facility", as cited in Section 51238 (a) (1), includes power plants making the proposed project compatible with adjacent uses:

1. The County of San Diego, Department of Planning and Land Use, prepared a letter dated December 13, 2007, in response to the Energy Commission's standard request for local government input. The County's letter states that the "the proposed project is compatible with the Agricultural Preserve (Pala #15)."

2. Major Impact Services and Utilities are permitted in the zoning district by Major Use Permit and are consistent with the County's General Plan.

The required APA findings are provided herein.

B. The proposed project is consistent with the SDGP as provided in the General Plan Regional Land Use Element Compatibility Matrix.

C. Compliance with the requirements of CEQA is the purpose of the SA.

Section 4600 of the County of San Diego Zoning Ordinance regulates building height. The maximum permitted height of buildings for the two parcels is 35 feet and two stories. Section 4620 provides exemptions to height limit restrictions. It states that "any structure for which a Major Use Permit is granted pursuant to other provisions of this ordinance, when the Major Use Permit authorizes an exemption to the height regulations."

D. San Diego County did not recommend height limitations for the proposed project. The County's Zoning Ordinance does not provide alternate height limitations. The proposed 60 feet high structures are exempt from height limitations.

Agricultural Preserve Area:

Section 5100 of the County of San Diego Zoning Ordinance, establishes the "A" special regulation designator (Agricultural Preserve Area) for the subject parcels and Section 5110 establishes the required findings:

A. State Statute. The proposed use complies with all provisions of the California Land Conservation Act of 1965; and

B. Compatibility with Agricultural Use. The proposed use would not be incompatible with the continued agricultural use of any land within the agricultural preserve. This determination shall Include a consideration of the following:

1. Possible increase In vandalism;

2. Possible damage from pets;

3. Possibility that use will lead to restrictions on agricultural spraying, noise or smell; and

4. Possible Interference with the movement of farm machinery or agricultural products.

Potential Agricultural Preserve Area Findings

A. With respect to compliance with all the provisions of California Land Conservation Act (CLCA, Williamson Act), a geothermal power plant does not meet the intent and purpose of the CLCA with respect to agricultural preservation and conservation. Except as provided by CLCA, Section 51238 (a) (1), the project would conflict with CLCA because the proposed project does not meet the intent and purpose of agricultural preservation and conservation.

   Energy Commission staff considered the following two factors in determining "electrical facility", as cited in Section 51238 (a) (1), includes power plants making the proposed project compatible with adjacent uses:

   1. The County of San Diego, Department of Planning and Land Use, prepared a letter dated December 13, 2007, in response to the Energy Commission's standard request for local government input. The County's letter states that the "the proposed project is compatible with the Agricultural Preserve (Pala #15)."

   2. Major Impact Services and Utilities are permitted in the zoning district by Major Use Permit and are consistent with the SDGP.

   The required MUP findings are provided herein.

B. With respect to compatibility of continued agricultural use, the proposed project is compatible with the continued agricultural use of lands within the agricultural preserve based on the following findings:

   1. The subject site is in a California Department of Conservation mapped Farmland of Statewide Importance (refer to the **Agricultural Resources** discussion contained herein below). As discussed herein, **Agricultural Resources**, the subject site parcels are less than suitable for agricultural use.

   2. Continued agricultural use in the Agricultural Preserve is not likely considering that the SDGP Update depicts the property as Public/Semi-Public Facilities on the proposed SDGP Update Maps published on the County's web site. In addition, the Gregory Canyon Landfill is proposed on one adjacent parcel and a large area within the vicinity of the project.

3. The proposed project in located in a rural area and an increase in vandalism is not likely, damage from pets is unlikely since the proposed project is non-residential, agricultural spraying is not proposed and will not interfere with the movement of farm machinery or agricultural products.

The Energy Commission must also adopt the APA and MUP findings for the proposed project to be in compliance the LORS.

Flood Plain Area

A portion of the subject parcel has an “F” special regulation designator (Flood Plain Area). The project must be designed to minimize flooding and reduce the need for flood control facilities on properties within the 100-year flood plain (FEMA) pursuant to Section 5500 of the County of San Diego Zoning Ordinance

Section 5504

This section allows a parcel to be removed from the Flood Plain Designator. Pursuant to a public hearing initiated by the County, the flood plain designator shall be removed from any property no longer subject to inundation as a result of grading, landscaping, clearing or the construction of flood control structures or facilities in accordance with the provisions of Section 5512. The floodway will be adjusted in accordance with any changes therein resulting from such construction.

Section 5510

This section states that no building or structure shall be placed, erected, constructed, altered or enlarged within the area subject to the Flood Plain Area Regulations except in accordance with such regulations, with provisions of the San Diego County Code including but not limited to the Building Code (Chapter 1 of Title 5 of the San Diego County Code) applicable to areas subject to Inundation, and Division 8 of Title 8 of San Diego County Code applicable to drainage and watercourses.

Section 5512

This section states that no drainage or flood control channel or facility shall be placed, erected, constructed, reconstructed, altered or enlarged, provided, however, existing flood control structures or facilities may be repaired and maintained; and the following facilities may be placed, erected, constructed, reconstructed, altered or enlarged if such a facility would not unduly accelerate or increase the flow of water so as to create a condition which would be detrimental to the health or safety of persons or property. Subsection (e): Other Structures or facilities. Any similar drainage or flood control structure or facility which the Director of the Department of Sanitation and Flood Control determines would not unduly accelerate or increase the flow of water so as to create a condition which would be detrimental to the health or safety of persons or property.

Section 5516

This section states that except as provided in Section 5514, no permanent building or structure designed or used for human habitation or as a place of work or by the public shall be constructed, erected, or placed in a floodway.

Section 5518 provides provisions for non-human place of work as an exception to Section 5516. Similarly, Section 5520 provides provisions for temporary structures as an exception to Section 5516. In addition, Section 5522 provides provisions for materials storage as an exception to Section 5516.

To ensure compliance with the requirements of the County's Zoning Ordinance, the following conditions of certification are provided:

- The project must comply with applicable design criteria as provided in the Zoning Ordinance, Land Development regulations and Standards and other applicable public works regulations. Condition of Certification **LAND-1** requires compliance with County design criteria relative to flooding and flood control facilities.
- Condition of Certification **LAND-2** requires the proposed project's design, layout and engineering, to comply with the San Diego County Zoning Ordinance with respect to lot area, building type, building height, setbacks, lighting, fences, walls, screening, landscaping, enclosures and signs.

Land Use Table 3
Proposed Project's Consistency With
LORS Applicable to Land Use and Agriculture Resources

LORS		Consistency Determination	Basis for Consistency
Source	**Policy and Strategy Descriptions**		
State	**California**		
California Land Conservation Act of 1965 SS 51200	Regulates Agricultural Preserve lands.	YES	Energy Commission staff considered the following two factors in determining "electrical facility", as cited in Section 51238 (a) (1), includes power plants making the proposed project compatible with adjacent uses: 1. The County of San Diego, Department of Planning and Land Use, prepared a letter dated December 13, 2007, in response to the Energy Commission's standard request for local government input. The County's letter states that the "the proposed project is compatible with the Agricultural Preserve (Pala #15)." 2. Major Impact Services and Utilities are permitted in the zoning district by Major Use Permit and are consistent with the County's General Plan The required APA and MUP findings are provided herein.

LORS		Consistency Determination	Basis for Consistency
Source	**Policy and Strategy Descriptions**		
Local	**San Diego County**		
General Plan - Regional Land Use Element, Section 2.5	General Agriculture is the subject parcels' land use designation according to the Regional Land Use Element (RLUE) Section 2.5.	YES	The proposed project would not conflict with the San Diego County General Plan designation for the subject parcels. According to the General Plan Regional Land Use Element Compatibility Matrix, page II-50, A70 and A72 zoning is consistent with the (20) General Agriculture land use designation.
General Plan - Regional Land Use Element, Section 1.6	The proposed project site is designated as an Environmentally Constrained Area (ECA) in RLUE Section 1.6.	YES	The Conservation Element does not contain prohibitive land use planning policies with respect to an ECA.
General Plan - Conservation Element	Policy 2 in Chapter 6 of the Conservation Plan states that, "the County will analyze, improve and promote methods for preserving agriculture".	YES	The Conservation Element does not contain prohibitive land use planning policies with respect to preserving agriculture.
General Plan - Conservation Element	The conservation Plan identifies the planning area where the subject site is located as Resource Conservation Area (RCA) and Unique Geologic Feature (UGF).	YES	The Conservation Element does not contain prohibitive land use planning policies with respect to an RCA or UGF.
General Plan - Pala/Pauma Subregional Plan	Policies in this Plan are primarily concerned with urban sprawl and leapfrog development.	YES	The project does not promote urban sprawl and leapfrog development.
The Zoning Ordinance of San Diego County Ordinance No. 5281 (New Series)	Zoning for the proposed OGP site is A72 General Agricultural. **Section 2722** lists permitted uses in general agricultural zoning. Energy projects are permitted within this zoning with a Major Use Permit. **Section 2725** lists types of uses that would be permitted upon approval of Major Use Permit findings and includes Major Impact Services and Utilities.	YES	Refer to the **LORS COMPLIANCE, Land Use Planning Staff Analysis.**

LORS		Consistency Determination	Basis for Consistency
Source	**Policy and Strategy Descriptions**		
The Zoning Ordinance of San Diego County Ordinance No. 5281 (New Series)	**Section 4200** regulates minimum lot area.	YES	According to the County's GIS property profile for APN 110-072-026 the minimum lot area is 10,000 square feet and for APN 110-370-01 the minimum lot area is 40 acres. The total acreage for the legal parcels is 55-acres.
The Zoning Ordinance of San Diego County Ordinance No. 5281 (New Series)	**Section 4300** regulates building type.	YES	The building type for each parcel is attached and detached. The proposed project design conforms with these criteria.
The Zoning Ordinance of San Diego County Ordinance No. 5281 (New Series)	**Section 4600** regulates building height. The maximum permitted height of buildings for the two parcels is 35 feet and two stories.	YES	Section 4620 provides exemptions to height limit restrictions: San Diego County did not recommend height limitations for the proposed project. The County's Zoning Ordinance does not provide alternate height limitations. The proposed 60 feet high structures are exempt from height limitations.
The Zoning Ordinance of San Diego County Ordinance No. 5281 (New Series)	**Section 4800** regulates setbacks. The front-yard setback for the two parcels is 60 feet from any abutting public street or private thoroughfare. The interior side-yard setback for the two parcels is 15 feet as measured from the lot line. The exterior side-yard setback for the two parcels is 35 feet as measured from the centerline of the abutting street. The rear-yard setback for the two parcels is 25 as measured from the rear lot line. Where a rear yard opens onto an alley, public park, or other permanent open space, 1/2 of the width of such alley, public park, or other permanent open space, may be considered as applying to the rear yard setback to the extent of not more than 50% of the required rear yard setback.	YES	The site's plot plan shows the proposed project's building footprint covering portions of APN 110-072-26 and APN 110-370-01. According to the regulations, the front-yard setback for each of these two parcels is 60 feet from any abutting public street or private thoroughfare. Since the project is accessed from Pala Del Norte Road, the front-yard setback for parcel 110-072-26 is measured from Pala Del Norte Road to the nearest building or structure. The nearest structure to the abutting Pala Del Norte Road is more than 60 feet. Similarly, the front-yard setback for parcel 110-370-01 is measured from SR-76, Pala Road to the nearest building or structure, which is more than 60 feet. The interior side-yard setback for the two parcels is15 feet as measured from the lot-line. For

LORS		Consistency Determination	Basis for Consistency
Source	**Policy and Strategy Descriptions**		
The Zoning Ordinance of San Diego County Ordinance No. 5281 (New Series) (cont.)			parcel 110-072-26, the respective side-yard setbacks are measured from the parcel's lot lines to the north and south. For parcel 110-370-01, the respective side yards are measured from the east and west lot lines. The rear-yard setback is measured from the north property line. The parking lot to be located on parcel APN 110-370-01 and contiguous to the primary facilities is not in compliance with the established setback requirements. Section 4821 of the County's Zoning Ordinance supplants interior side-yard requirements, however. It states, "when the common lot line separating two or more contiguous lots is covered by a building or group of buildings, or when two or more such lots are used as a single building site, such lots shall constitute a single building site and the interior side yard setbacks required by an applicable setback designator shall then not apply to such common lot line." The proposed project meets side-yard setback requirements. For APN 110-072-26, the rear-yard is measured from the lot-line to the east. For APN 110-370-01, the rear-yard setback for the two parcels is 25 as measured from the rear lot line. The proposed project meets rear-yard setback requirements.
The Zoning Ordinance of San Diego County Ordinance No. 5281 (New Series)	**Section 5100** regulates Agricultural Preserve Area (APA).	YES	Refer to **LORS Compliance** of the Land Use Planning Staff Analysis.

LORS		Consistency Determination	Basis for Consistency
Source	**Policy and Strategy Descriptions**		
The Zoning Ordinance of San Diego County Ordinance No. 5281 (New Series)	**Section 5500** regulates Flood Plain Area (FPA). The two parcels are partially designated as FPA. Buildings on such designated properties must be engineered to minimize impacts from flooding.	YES	Buildings on such designated properties must be engineered to minimize impacts from flooding.
The Zoning Ordinance of San Diego County Ordinance No. 5281 (New Series)	**Section 6300** regulates commercial and industrial outdoor lighting.	YES	All lighting must conform and comply with the zoning ordinance and Light Pollution Control Code. The Visual Resources section of the Staff Assessment provides the required findings.
The Zoning Ordinance of San Diego County Ordinance No. 5281 (New Series)	**Section 6700** regulates fences, walls, screening and landscaping.	YES	All fences, walls, screening and landscaping must conform and comply with the zoning ordinance.
The Zoning Ordinance of San Diego County Ordinance No. 5281 (New Series)	**Section 6750** regulates parking.	YES	All parking must conform and comply with the zoning ordinance.
The Zoning Ordinance of San Diego County Ordinance No. 5281 (New Series)	**Section 6800** regulates enclosures. Enclosure means the degree that the storage and display of goods may be open and/or visible from public rights-of-way.	YES	All enclosures must conform and comply with the zoning ordinance.
The Zoning Ordinance of San Diego County Ordinance No. 5281 (New Series)	**Section 6200 & 6250** regulates signs.	YES	All signs must conform and comply with the zoning ordinance.
The Zoning Ordinance of San Diego County Ordinance No. 5281 (New Series)	Section 7350 provides use permit procedures.	YES	Findings for the Major Use Permit are found in the **LORS COMPLIANCE** of Land Use Planning Staff Analysis.

CONCLUSIONS AND RECOMMENDATIONS

The land use analysis for the proposed project focused on two main issues; (1) would the proposed project conflict with land use planning and agriculture resources impact(s) according to the CEQA, and (2) would the project comply with applicable LORS pertaining to local land use and agriculture resources.

- The project may generate an adverse environmental impact related to land use introduced by unmitigated air quality, noise, public health hazard, or water supply impacts to surrounding properties. For a more detailed discussion see the **AIR QUALITY**, **NOISE AND VIBRATION**, **PUBLIC HEALTH**, **VISUAL RESOURCES** and **SOIL AND WATER RESOURCES** sections in this SA.
- The subject project site would not physically divide an established community. The nearest established community to the project site is the Pala Indian Reservation which is approximately 1.5 miles east from the project site.
- The proposed project does not conflict with any applicable land use plan, policy or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect.
- The proposed project may conflict with any applicable habitat conservation plan or natural community conservation plan. The proposed project falls under the jurisdiction of the North County Community Conservation Plan and Multiple Species Conservation Program. Consistency with this plan is further discussed in the **BIOLOGICAL RESOURCES** section of the SA.
- The proposed project involves the conversion of land shown as “Farmland of Local Importance” on a map prepared by the California Department of Conservation, Farmland Mapping and Monitoring Program. Staff completed a California Agricultural LESA Model worksheet for the proposed project site. The LESA score for the project site was 23.99 points which is not considered significant by the model’s scoring threshold. The project would not cause any direct, indirect, cumulative agriculture resources impact.
- The project site does not involve land that has an executed Williamson Act contract and does not conflict with existing zoning for agricultural use.
- Within a six-mile radius of the project site there is not an identified minority population or low-income population of greater than 50%. The proposed project does not introduce a significant land use planning or agriculture resources impact related to an environmental justice issue.
- The construction and operation of the project with the effective implementation of the mitigation measures identified by the project owner and staff’s recommended conditions of certification contained herein the SA, would not cause any direct, indirect or cumulative adverse land use planning and agriculture resources impacts, and would ensure conformance with the applicable county LORS pertaining to land use.
- The proposed project site is in compliance with applicable LORS pertaining to CLCA.

- The proposed project site is in compliance with applicable LORS pertaining to the SDGP land uses.
- The proposed project site is in compliance with applicable LORS pertaining to the SDGP Conservation Element with the effective implementation of the conditions of certifications.
- The proposed project site is in compliance with applicable LORS pertaining to zoning with the effective implementation of the conditions of certifications.

PROPOSED CONDITIONS OF CERTIFICATION

LAND-1 The project owner shall design the project according to applicable San Diego County Design practices and policies and applicable County approved building codes.

Verification: At least sixty (60) days prior to the start of construction, the project owner shall submit to the Compliance Project Manager (CPM) applicable design standards and building codes and evidence of design review and building inspection by the County of San Diego Environmental Health, Public Works, Planning and Land Use (Building) Departments and Chief Building Official.

LAND-2 The project owner shall design and construct the project in accordance to the standards found in the San Diego County Zoning Ordinance with respect to lot area, building type, building height, setbacks, lighting, fences, walls, screening, landscaping, enclosures and signs. The project owner shall provide a table of applicable Zoning Ordinance standards and criteria pertaining to lot area, building type, building height, setbacks, lighting, fences, walls, screening, landscaping, enclosures and signs and basis for compliance with each.

Verification: At least sixty (60) days prior to the start of construction the project owner shall submit the referenced table to the Compliance Project Manager and Chief Building Official (CBO). The CBO shall review the table and building design plans and certify compliance with the Zoning Ordinance standards and criteria. If the CBO cannot certify a particular standard or criteria because compliance cannot be determined, the project owner shall provide a reasonable timeframe of when such standard or criteria can be determined in compliance. The project cannot commence construction until all standards and criteria are met, unless such matter is minor in nature and authorization is granted by the CPM.

REFERENCES

COSD1979 and 2003 - County of San Diego General Plan. County of San Diego Department of Planning and Land Use, Regional Land Use Element. January 3, 1979 and as amended December 10, 1983.

COSD1975 and 2002 - County of San Diego General Plan. County of San Diego Department of Planning and Land Use, Conservation Element, December 10, 1975 and as amended April 17, 2002.

COSD1979 and 2003 - County of San Diego General Plan. County of San Diego Department of Planning and Land Use, Pala/Pauma Subregional Plan. January 3, 1979 and as amended May 7, 1986.

COSD 1978 & 2008- County of San Diego Zoning Ordinance. County of San Diego Department of Planning and Land Use. December 19, 1978 and updated through Ordinance update No. 76, September 2008.

COSD Present- County of San Diego Department of Planning and Land Use. GIS Mapping Application. http://gis.co.san-diego.ca.us/imf/sites/property/index.jsp.

OGE2008a – OGE/S. Thome (tn46770) Application for Certification Orange Grove Energy dated 6/19/08. Submitted to Dockets 6/19/08.

USDA 2008 - United States Department of Agriculture (USDA), Natural Resources Conservation Service Web Soil Survey, 2008 (http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx).

USDA 1973 - Soil Survey for San Diego, California, 1973.

CDC 2006 – California Department of Conservation (CDC), Farmland Mapping and Monitoring Program, San Diego County Important Farmland Map.

COSD2007 – County of San Diego. Department of Planning and Land Use letter dated December 13, 2007.

LAND USE
Appendix LU-1

OGP Site LESA Model Worksheet

Appendix A. California Agricultural LESA Worksheet

The California Agricultural LESA Model is composed of six different factors. Two "Land Evaluation" factors are based upon measures of soil resource quality. Four "Site Assessment" factors provide measures of a given project's size, water resource availability, surrounding agricultural lands, and surrounding protected resource lands. For a given project, each of these factors is separately rated on a 100 point scale. The factors are then weighted relative to one another and combined, resulting in a single numeric score for a given project, with a maximum attainable score of 100 points. It is this project score that becomes the basis for making a determination of a project's potential significance, based upon a range of established scoring thresholds. The California Agricultural LESA Instruction Manual found at the California Department of Conservation, Division of Land Resource Protection website provides detailed instructions on how to complete the LESA worksheet.

Calculation of the Land Evaluation (LE) Score

Part 1. Land Capability Classification (LCC) Score

(1) Determine the total acreage of the project.
(2) Determine the soil types within the project area and enter them in **Column A** of the **Land Evaluation Worksheet** provided on page A-2.
(3) Calculate the total acres of each soil type and enter the amounts in **Column B**.
(4) Divide the acres of each soil type (**Column B**) by the total acreage to determine the proportion of each soil type present. Enter the proportion of each soil type in **Column C**.
(5) Determine the LCC for each soil type from the applicable Soil Survey and enter it in **Column D**
(6) From the LCC Scoring Table below, determine the point rating corresponding to the LCC for each soil type and enter it in **Column E**.

LCC Scoring Table

LCC Class	I	IIe	IIs, w	IIIe	IIIs, w	IVe	IVs, w	V	VIe, s, w	VIIe, s, w	VIII
Points	**100**	**90**	**80**	**70**	**60**	**50**	**40**	**30**	**20**	**10**	**0**

(7) Multiply the proportion of each soil type (**Column C**) by the point score (**Column E**) and enter the resulting scores in **Column F**.
(8) Sum the LCC scores in **Column F**.
(9) Enter the LCC score in box <1> of the Final LESA Score Sheet on page A-10.

Part 2. Storie Index Score

(1) Determine the Storie Index rating for each soil type and enter it in **Column G**.
(2) Multiply the proportion of each soil type (**Column C**) by the Storie Index rating (**Column G**) and enter the scores in **Column H**.
(3) Sum the Storie Index scores in **Column H** to gain the Storie Index Score.
(4) Enter the Storie Index Score in box <2> of the Final LESA Score Sheet on page A-10.

Land Evaluation Worksheet
Land Capability Classification (LCC) and Storie Index Scores

A	B	C	D	E	F	G	H
Soil Map Unit	Project Acres	Proportion of Project Area	LCC	LCC Rating	LCC Score	Storie Index	Storie Index Score
StG	9	0.163636364	VIIe	0	0	<10	1.636364
LrE	30	0.545454545	VIe	20	10.90909	24	13.09091
LrG	16	0.290909091	VIIe	10	2.909091	8	2.327273
TuB	negligible						
Totals	**55**	**1.00**		***LCC Total Score***	**10.91**	***Storie Index Total Score***	**17.05**
		(Must Sum To 1.0)					

Site Assessment Worksheet 1.
Project Size Score

	I	J	K
	LCC Class I - II	LCC Class III	LCC Class IV- VIII
			9
			30
			16
Total Acres			**55**
Project Size Scores			**20**
Highest Project Size Score		**20**	

Part 1. Project Size Score

(1) Using **Site Assessment Worksheet 1** provided on page A-2, enter the acreage of each soil type from **Column B** in the **Column I, J or K** that corresponds to the LCC for that soil. (Note: While the Project Size Score is a component of the Site Assessment calculations, the score sheet is an extension of data collected in the Land Evaluation Worksheet, and is therefore displayed beside it.)

(2) Sum **Column I** to determine the total amount of class I and II soils on the project site.

(3) Sum **Column J** to determine the total amount of class III soils on the project site.

(4) Sum **Column K** to determine the total amount of class IV and lower soils on the project site.

(5) Compare the total score for each LCC group in the Project Size Scoring Table below and determine which group receives the highest score.

Project Size Scoring Table

Class I or II			**Class III**			**Class IV or Lower**	
Acreage	Points		Acreage	Points		Acreage	Points
>80	100		>160	100		>320	100
60-79	90		120-159	90		240-319	80
40-59	80		80-119	80		160-239	60
20-39	50		60-79	70		100-159	40
10-19	30		40-59	60		40-99	20
10<	0		20-39	30		40<	0
			10-19	10			
			10<	0			

(6) Enter the **Project Size Score** (the highest score from the three LCC categories) in box <3> of the Final LESA Score Sheet on page A-10.

Part 2. Water Resource Availability Score

(1) Determine the type(s) of irrigation present on the project site, including a determination of whether there is dry land agricultural activity as well.

(2) Divide the site into portions according to the type or types of irrigation or dry land cropping that is available in each portion. Enter this information in **Column B** of **Site Assessment Worksheet 2 - Water Resources Availability** provided on page A-5.

(3) Determine the proportion of the total site represented for each portion identified, and enter this information in **Column C**.

(4) Using the Water Resources Availability Scoring Table provided on page A-6, identify the option that is most applicable for each portion, based upon the feasibility of irrigation in drought and non-drought years, and whether physical or economic restrictions are likely to exist. Enter the applicable Water Resource Availability Score into **Column D**.

(5) Multiply the Water Resource Availability Score for each portion by the proportion of the project area it represents to determine the weighted score for each portion in **Column E**.

(6) Sum the scores for all portions to determine the project's total Water Resources Availability Score.

(7) Enter the Water Resource Availability Score in box <4> of the Final LESA Score Sheet on page A-10.

Site Assessment Worksheet 2.
Water Resource Availability

A	B	C	D	E
Project Portion	Water Source	Proportion of Project Area	Water Availability Score	Weighted Availability Score (C x D)
1	Well	1	90	90
2				
3				
4				
5				
6				
		1.00	***Total Water Resource Score***	**90.00**

(Must Sum to 1.0)

Water Resource Availability Scoring Table

Option	Non-Drought Years			Drought Years			WATER RESOURCE SCORE
	RESTRICTIONS			RESTRICTIONS			
	Irrigated Production Feasible?	Physical Restrictions ?	Economic Restrictions ?	Irrigated Production Feasible?	Physical Restrictions ?	Economic Restrictions?	
1	YES	NO	NO	YES	NO	NO	100
2	YES	NO	NO	YES	NO	YES	95
3	YES	NO	YES	YES	NO	YES	90
4	YES	NO	NO	YES	YES	NO	85
5	YES	NO	NO	YES	YES	YES	80
6	YES	YES	NO	YES	YES	NO	75
7	YES	YES	YES	YES	YES	YES	65
8	YES	NO	NO	NO	– –	– –	50
9	YES	NO	YES	NO	– –	– –	45
10	YES	YES	NO	NO	– –	– –	35
11	YES	YES	YES	NO	– –	– –	30
12	Irrigated production not feasible, but rainfall adequate for dry land production in both drought and non-drought years.						25
13	Irrigated production not feasible, but rainfall adequate for dry land production in non-drought years but not in drought years).						20
14	Neither irrigated nor dry land production feasible.						0

Part 3. Surrounding Agricultural Land Use Score

(1) Calculate the project's Zone of Influence (ZOI) as follows:

(a) a rectangle is drawn around the project such that the rectangle is the smallest that can completely encompass the project area.

(b) a second rectangle is then drawn which extends one quarter mile (1,320 feet) on all sides beyond the first rectangle.

(c) The ZOI includes all parcels that are contained within or are intersected by the second rectangle, less the area of the project itself.

(2) Sum the area of all parcels to determine the total acreage of the ZOI.

(3) Determine which parcels are in agricultural use and sum the areas of these parcels.

(4) Divide the area in agriculture found in step (3) by the total area of the ZOI found in step (2) to determine the percent of the ZOI that is in agricultural use.

(5) Determine the Surrounding Agricultural Land Score utilizing the Surrounding Agricultural Land Scoring Table below.

Surrounding Agricultural Land Scoring Table

Percent of ZOI in Agriculture	Surrounding Agricultural Land Score
90-100	100
80-89	95
70-79	90
65-69	85
60-64	80
55-59	70
50-54	60
45-49	50
40-44	40
35-39	30
30-34	20
20-29	10
<19	0

(6) Enter the Surrounding Agricultural Land Score in box <5> of the Final LESA Score Sheet on page A-10.

Part 4. Surrounding Protected Resource Land Score

The Surrounding Protected Resource Land scoring relies upon the same Zone of Influence information gathered in Part 3, and figures are entered in Site Assessment Worksheet 3, which combines the surrounding agricultural and protected lands calculations.

(1) Use the total area of the ZOI calculated in Part 3 for the Surrounding Agricultural Land Use score.

(2) Sum the area of those parcels within the ZOI that are protected resource lands, as defined in the LESA Instruction Manual (e.g., Williamson Act contracted lands, publicly owned lands maintained as park, forest, or watershed resources).

(3) Divide the area that is determined to be protected in step (2) by the total acreage of the ZOI to determine the percentage of the surrounding area that is under resource protection.

(4) Determine the Surrounding Protected Resource Land Score utilizing the Surrounding Protected Resource Land Scoring Table below.

Surrounding Protected Resource Land Scoring Table

Percent of ZOI Protected	Protected Resource Land Score
90-100	100
80-89	95
70-79	90
65-69	85
60-64	80
55-59	70
50-54	60
45-49	50
40-44	40
35-39	30
30-34	20
20-29	10
<20	0

(5) Enter the Surrounding Protected Resource Land score in box <6> of the Final LESA Score Sheet on page A-10.

Surrounding Agricultural Land and Surrounding Protected Resource Land

A	B	C	D	E	F	G
Zone of Influence					Surrounding Agricultural Land Score (from table on page A-7)	Surrounding Protected Resource Land Score (from table on page A-8)
Total Acres	Acres in Agriculture	Acres of Protected Resource Land	Percent in Agriculture (B/A)	Percent Protected Resource Land (C/A)		
43	0	0	0	0	0	0
50	0	0	0	0	0	0
30	0	0	0	0	0	0
40	0	22	0	0.55	0	70
73	5	65	0.068493151	0.890410959	0	95
42	0	42	0	1	0	100
21	0	0	0	0	0	0

44	0	0	0	0	0	0
45	0	0	0	0	0	0
43	0	0	0	0	0	0
431	5	129	0.068493151	0.299303944	0	10

Final LESA Score Sheet

Calculation of the Final LESA Score

(1) Multiply each factor score by the factor weight to determine the weighted score and enter in Weighted Factor Scores column.
(2) Sum the weighted factor scores for the LE factors to determine the total LE score for the project.
(3) Sum the weighted factor scores for the SA factors to determine the total SA score for the project.
(4) Sum the total LE and SA scores to determine the Final LESA Score for the project.

		Factor Scores	Factor Weight	Weighted Factor Scores
LE Factors				
Land Capability Classification (see page A-2)	<1>	10.91	0.25	2.7275
Storie Index Rating (see page A-2)	<2>	17.05	0.25	4.2625
LE Subtotal			**0.50**	**6.99**
SA Factors				
Project Size (see page A-2)	<3>	20	0.15	3
Water Resource Availability (see page A-5)	<4>	90	0.15	13.5
Surrounding Agricultural Land (see page A-9)	<5>	0	0.15	0
Surrounding Protected Resource Land (see page A-9)	<6>	10	0.05	0.5
SA Subtotal			**0.50**	**17**
			Final LESA Score	**23.99**

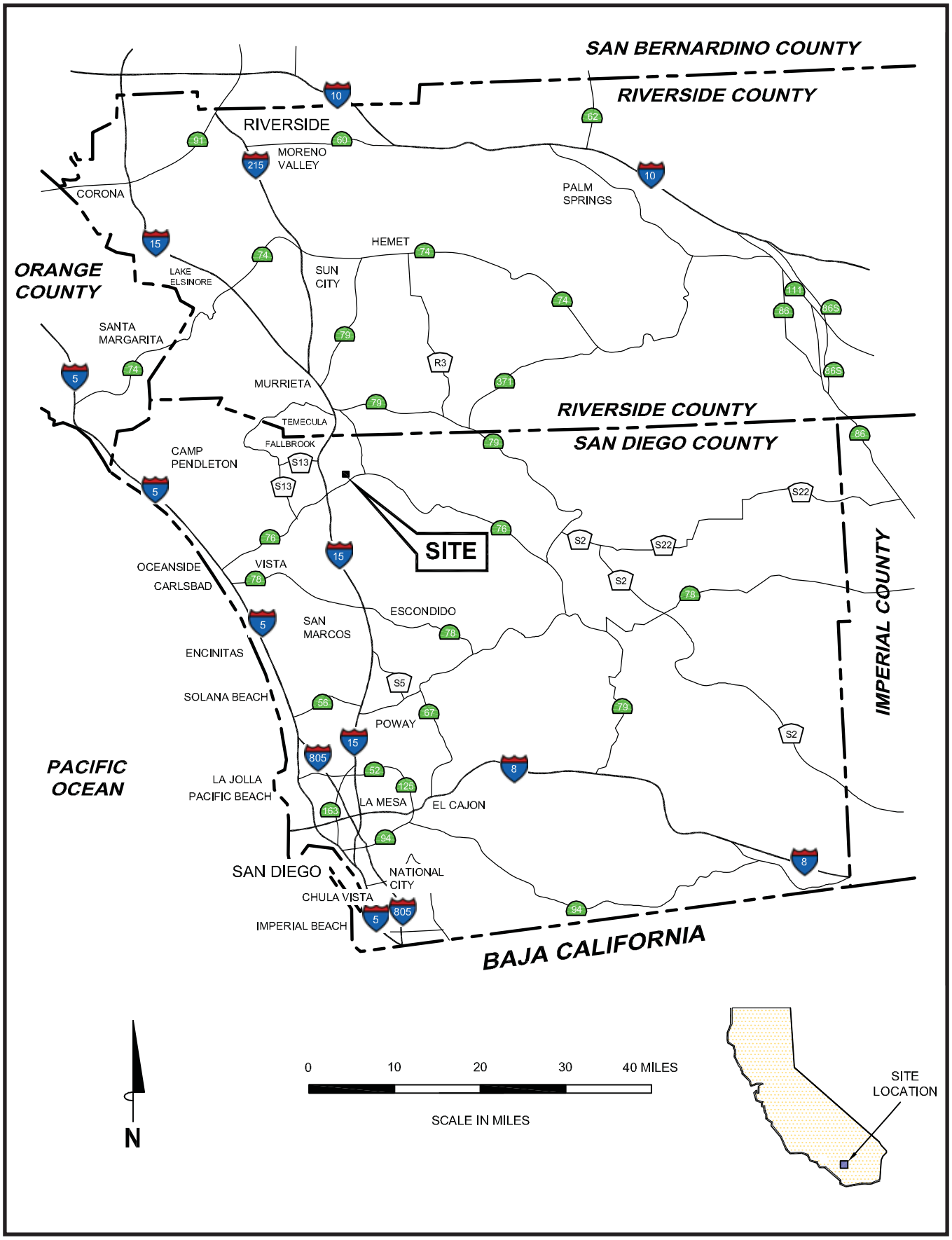
California Agricultural LESA Scoring Thresholds

Total LESA Score		Scoring Decision
0 to 39 points		Not Considered Significant
40 to 59 points		Considered Significant only if LE and SA subscores are each greater than or equal to 20 points
60 to 79 points		Considered Significant unless either LE or SA subscore is less than 20 points
80 to 100 points		Considered Significant

The California Agricultural LESA Model is designed to make determinations of the potential significance of a project's conversion of agricultural lands during the Initial Study phase of the CEQA review process. Scoring thresholds are based upon both the total LESA score as well the component LE and SA subscores. In this manner the scoring thresholds are dependent upon the attainment of a minimum score for the LE and SA subscores so that a single threshold is not the result of heavily skewed subscores (i.e., a site with a very high LE score, but a very low SA score, or vice versa). For additional information on the significance scoring thresholds under the California Agricultural LESA Model, consult Section 4 in the LESA Instruction Manual.

LAND USE - FIGURE 1

Orange Grove Project - Proposed Project Location Map

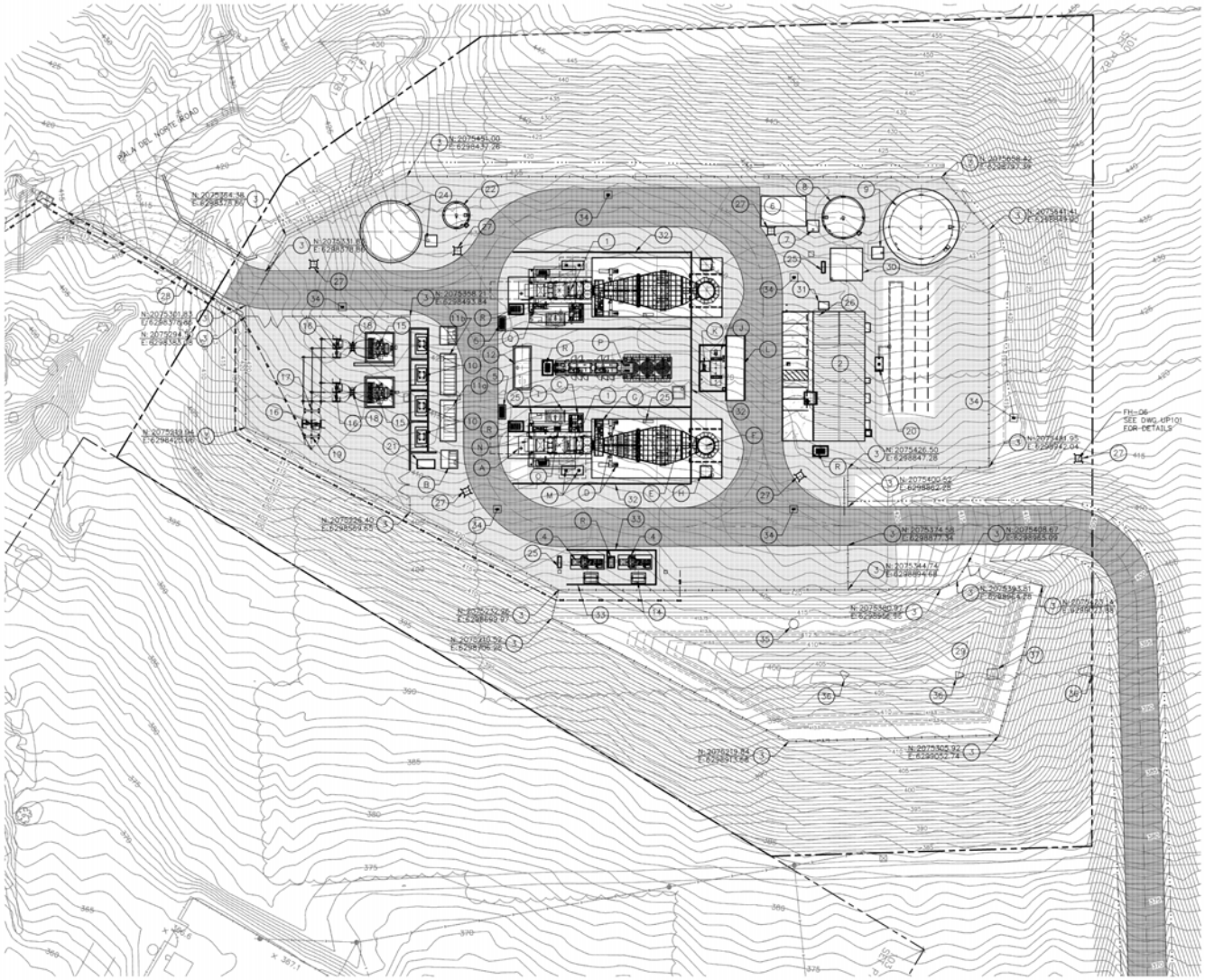


CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMETAL PROTECTION DIVISION, NOVEMBER 2008

SOURCE: AFC Figure 1.1-1

LAND USE - FIGURE 2

Orange Grove Project - Plot Plan



KEYNOTES:

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

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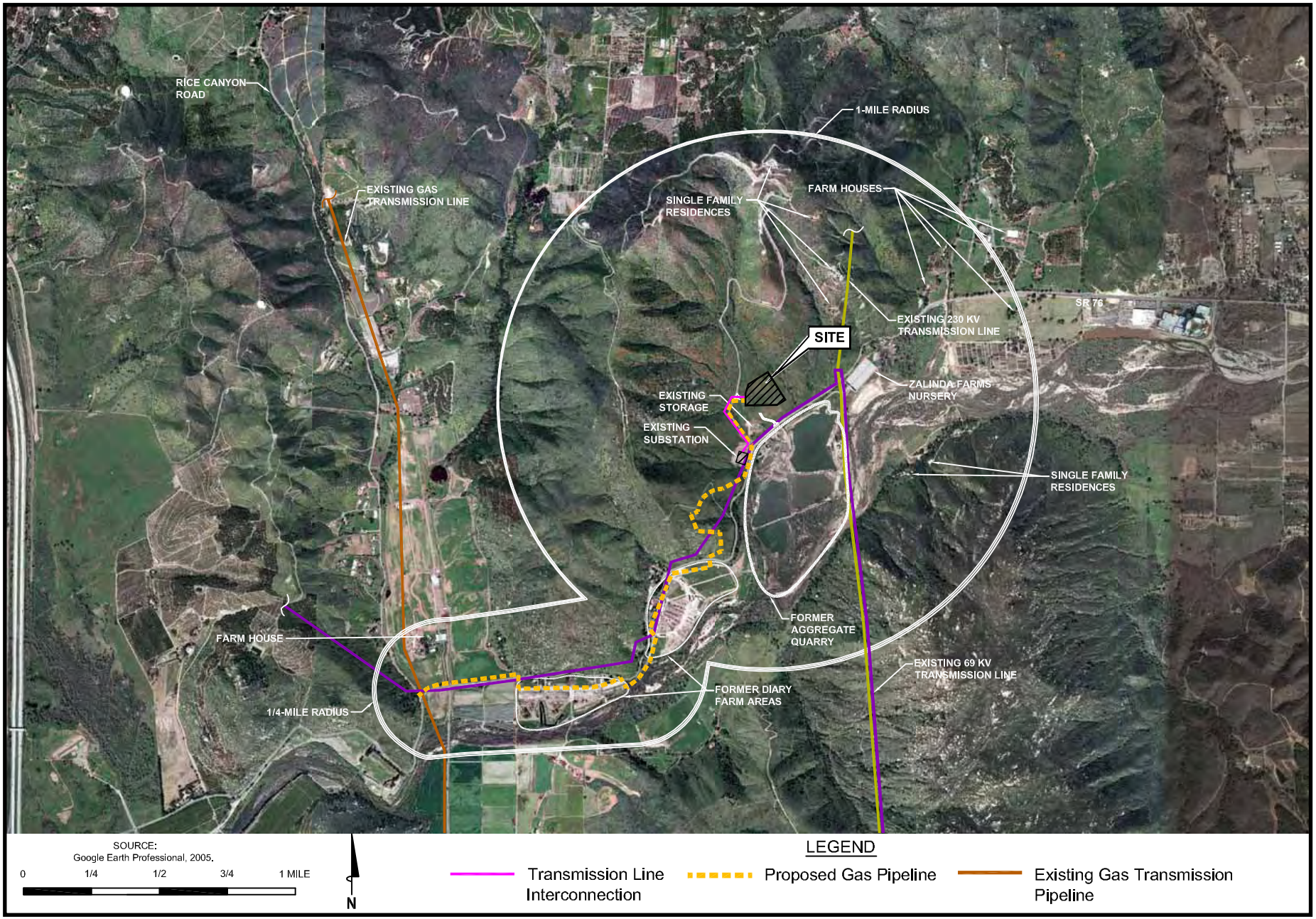
SOURCE: AFC Figure 1.1-4

LAND USE - FIGURE 3

Orange Grove Project - Aerial View of Project Site & Vicinity



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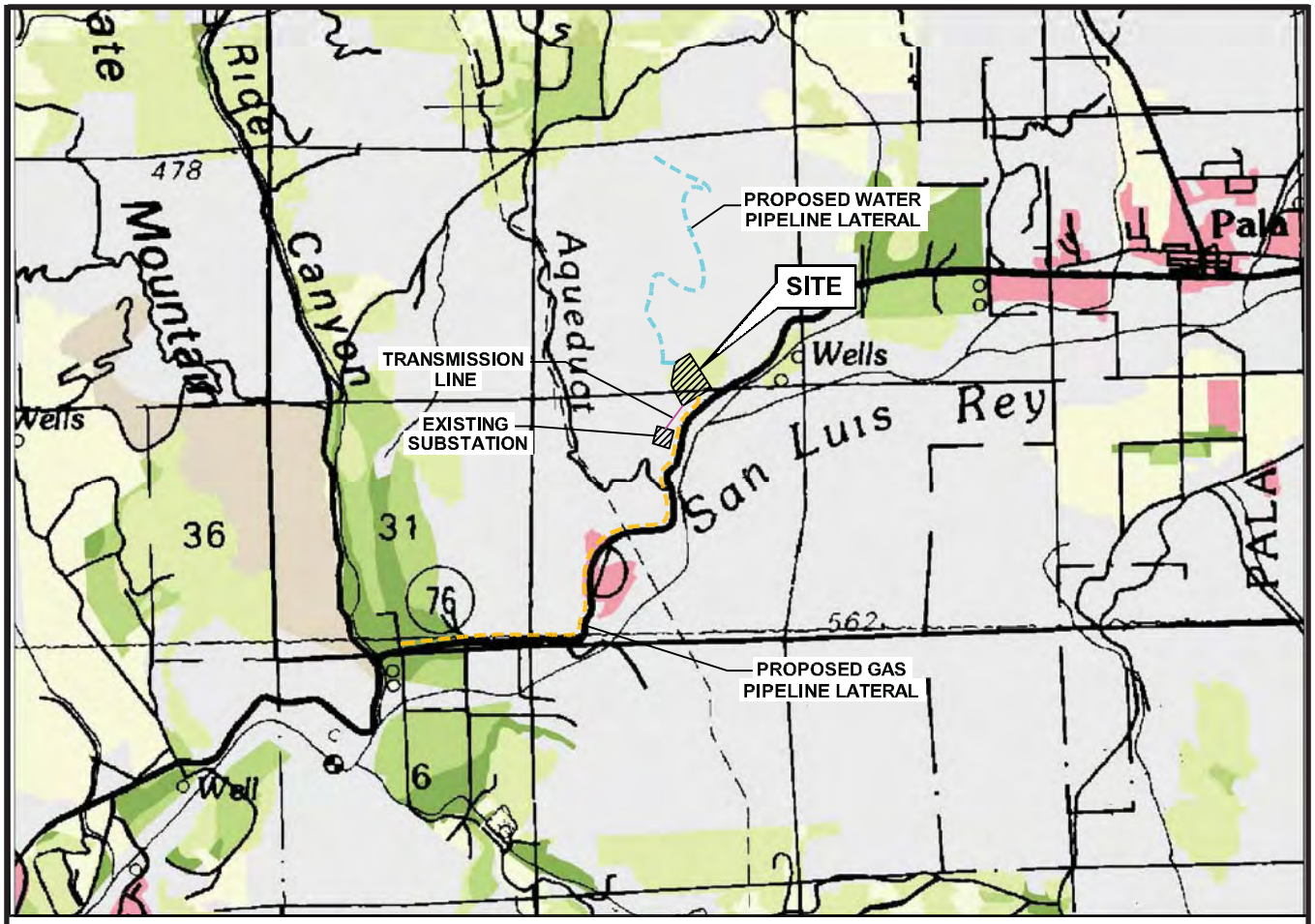
SOURCE: AFC Figure 6.9-4A

LAND USE - FIGURE 4

Orange Grove Project - CA Dept. of Conservation, Important Farmland Map



LEGEND

- Prime Farmland
- Farmland of Statewide Importance
- Unique Farmland
- Farmland of Local Importance
- Grazing Land
- Urban and Built-Up Land
- Other Land

SOURCE:
Department of Conservation, Division of Land Resource Protection, 2006.

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMETAL PROTECTION DIVISION, NOVEMBER 2008

SOURCE: AFC Figure 6.4-3

NOISE AND VIBRATION

Testimony of Shahab Khoshmashrab

SUMMARY OF CONCLUSIONS

The Orange Grove Project, if built and operated in conformance with the proposed conditions of certification below, would comply with all applicable noise and vibration laws, ordinances, regulations and standards, and would produce no significant adverse noise impacts on people within the affected area, directly, indirectly, or cumulatively. The applicant has proposed appropriate mitigation, in the form of good design practice and selection of appropriate project equipment, that would avoid any significant adverse impacts.

INTRODUCTION

The construction and operation of any power plant creates noise or unwanted sound. The character and loudness of this noise, the times of day or night that it is produced, and the proximity of the facility to sensitive receptors all combine to determine whether the facility would meet applicable noise control laws and ordinances and whether it would cause significant adverse environmental impacts. In some cases, vibration may be produced as a result of power plant construction practices such as blasting or pile driving. The ground-borne energy of vibration has the potential to cause structural damage and annoyance.

The purpose of this analysis is to identify and examine the likely noise and vibration impacts from the construction and operation of the Orange Grove Project (OGP), and to recommend procedures to ensure that the resulting noise and vibration impacts would be adequately mitigated to comply with applicable laws, ordinances, regulations and standards (LORS). For an explanation of technical terms used in this section, please refer to **NOISE APPENDIX A**, immediately following.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Noise Table 1
Laws, Ordinances, Regulations and Standards

Applicable Law	Description
Federal:	
Occupational Safety & Health Act (OSHA): 29 U.S.C. § 651 et seq.	Protects workers from the effects of occupational noise exposure
U.S. Environmental Protection Agency (USEPA)	Assists state and local government entities in development of state and local LORS for noise
State:	
California Occupational Safety & Health Act (Cal-OSHA): 29 U.S.C. § 651 et seq., Cal. Code Regs., tit. 8, §§ 5095-5099	Protects workers from the effects of occupational noise exposure
Local:	
County of San Diego Code of Regulatory Ordinances, Title 3, Public Safety	Establishes acceptable noise level limits at various land uses. Limits noisy construction to daytime hours and to no louder than 75 dBA L_{eq} at the property lines of any sensitive noise receptor[1].

FEDERAL

Under the Occupational Safety and Health Act of 1970 (OSHA) (29 U.S.C. § 651 et seq.), the Department of Labor, Occupational Safety and Health Administration, (OSHA) adopted regulations (29 C.F.R. § 1910.95) designed to protect workers against the effects of occupational noise exposure. These regulations list permissible noise exposure levels as a function of the amount of time during which the worker is exposed (see **Noise Appendix A Table A4**, immediately following this section). The regulations further specify a hearing conservation program that involves monitoring the noise to which workers are exposed, assuring that workers are made aware of overexposure to noise, and periodically testing the workers' hearing to detect any degradation.

Guidelines are available from the U.S. Environmental Protection Agency (USEPA) to assist state and local government entities in developing state and local LORS for noise. Because there are existing local LORS that apply to this project, the USEPA guidelines are not applicable.

There are no federal laws governing off-site (community) noise.

[1] A sensitive noise receptor, also referred to as a noise-sensitive receptor, is a receptor at which there is a reasonable degree of sensitivity to noise (such as residences, schools, hospitals, elder care facilities, libraries, cemeteries, and places of worship).

The Federal Transit Administration (FTA) has published guidelines for assessing the impacts of ground-borne vibration associated with construction of rail projects, which have been applied by other jurisdictions to other types of projects. The FTA-recommended vibration standards are expressed in terms of the "vibration level," which is calculated from the peak particle velocity measured from ground-borne vibration. The FTA measure of the threshold of perception is 65 vibrational decibel (VdB), which correlates to a peak particle velocity of about 0.002 inches per second (in/sec). The FTA measure of the threshold of architectural damage for conventional sensitive structures is 100 VdB, which correlates to a peak particle velocity of about 0.2 in/sec.

STATE

California Government Code Section 65302(f) encourages each local governmental entity to perform noise studies and implement a noise element as part of its general plan. In addition, the California Office of Planning and Research has published guidelines for preparing noise elements, which include recommendations for evaluating the compatibility of various land uses as a function of community noise exposure.

The State of California, Office of Noise Control, prepared the Model Community Noise Control Ordinance, which provides guidance for acceptable noise levels in the absence of local noise standards. This model also defines a simple tone, or "pure tone," as one-third octave band sound pressure levels that can be used to determine whether a noise source contains annoying tonal components. The Model Community Noise Control Ordinance further recommends that when a pure tone is present the applicable noise standard should be lowered (made more stringent) by five A-weighted decibels (dBA).

The California Occupational Safety and Health Administration (Cal-OSHA) has promulgated occupational noise exposure regulations (Cal. Code Regs., tit. 8, §§ 5095-5099) that set employee noise exposure limits. These standards are equivalent to federal OSHA standards (see **Noise Appendix A Table A4**).

LOCAL

County of San Diego LORS

The project is located within the unincorporated San Diego County, California. The County of San Diego Code of Regulatory Ordinances, Title 3, Public Safety (County 2008) applies to this project.

The noise standards are found in Chapter 4 of the County's Regulatory Ordinances. Section 36.404 establishes acceptable noise level limits for various land uses. According to this section, operational noise levels are limited to 45 dBA L_{eq} during the nighttime hours of 10:00 p.m. to 7:00 a.m. and 50 dBA L_{eq} during the daytime hours of 7:00 a.m. to 10:00 p.m., at any residential property.

Section 36.410 limits noisy construction to the hours of 7:00 a.m. to 7:00 p.m. Mondays through Fridays and to no louder than 75 dBA L_{eq} at the property lines of any noise-sensitive receptor.

SETTING

The proposed OGP site is located on an approximately 8.5-acre parcel north of State Route 76 (SR-76) and east of Interstate 15 in rural San Diego County, California. The land use designation of the project site is agricultural (see **Noise Figure 1**). Existing land uses adjacent to the project site include an electric substation, the private Pala Del Norte Road, grove land, and open space. To the west, north, and east of the site, moderately steep slopes of open space rise up to two ridgelines, with three houses near the ridgeline northeast of the site. These houses represent the closest residential receptors to the project site. Zalinda Farms Nursery (the nursery) and a few single family homes are located to the east and northeast of the site, beyond the ridgeline. Currently, there are occupied care-taker residences on the nursery's property.

Sources of noise in the project area include vehicle traffic on SR-76, mechanical equipment, Pala Casino and Resort (located approximately 1.5 miles east of the project site), a motor-driven wind propeller at the nursery, natural sounds (frogs, crickets, and barking dogs), and occasional aircraft overflights. In general, the noise environment in the project vicinity is typical of a sparsely-populated rural setting that includes a relatively heavily traveled roadway (SR-76) (OGE 2008a, AFC §6.12.4.1).

For purposes of evaluating the project's operational impacts on residential uses, the project noise is compared with measured ambient noise levels.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHODS AND THRESHOLDS FOR DETERMINING SIGNIFICANCE

California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires that significant environmental impacts be identified and either eliminated or mitigated to the extent feasible. Section XI of Appendix G of CEQA's guidelines (Cal. Code Regs., tit. 14, App. G) describes some characteristics that could signify a potentially significant impact. Specifically, a significant effect from noise may exist if a project would result in:

1. exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;

2. exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels;

3. substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or

4. substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

The Energy Commission staff, in applying Item 3, above, to the analysis of this and other projects, has concluded that a potential for a significant noise impact exists where

the noise of the project plus the background exceeds the background by 5 dBA or more at the nearest sensitive receptor, including those receptors that represent the area's minority population.

Staff has concluded that an increase in background noise levels up to 5 dBA in a residential setting is insignificant; an increase of more than 10 dBA, however, is clearly significant. An increase of between 5 and 10 dBA should be considered adverse, but could be either significant or insignificant, depending upon the particular circumstances of a particular case.

Factors to be considered in determining the significance of an adverse impact as defined above include:

1. the resulting noise level;[1]
2. the duration and frequency of the noise;
3. the number of people affected; and
4. the land use designation of the affected receptor sites.

Noise due to construction activities is usually considered to be insignificant in terms of CEQA compliance if:

- the construction activity is temporary; and
- the use of heavy equipment and noisy[2] activities is limited to daytime hours.

Staff uses the above method and threshold to protect the most sensitive populations, including the area's minority population.

Ambient Noise Monitoring

In order to establish a baseline for the comparison of predicted project noise with existing ambient noise, the applicant has presented the results of an ambient noise survey (OGE 2008a, AFC §6.12.4.1, Tables 6.12-6, 6.12-7, 6.12-8, Figures 6.12-1, 6.12-4, Appendix 6.12-A). This survey was performed from Wednesday, April 18 through Thursday, April 19, 2007, using acceptable equipment and techniques. The survey monitored existing noise levels at the following five locations, shown in **Noise Figure 2**.

1. Location LT1: Nearest residence to the project site. This location is approximately 2,050 feet northeast of the center of the project site. This location was monitored continuously from 3:35 p.m. on April 18 through 5:04 p.m. on April 19, 2007.

[1] For example, a noise level of 40 dBA would be considered quiet in many locations. A noise limit of 40 dBA would be consistent with the recommendations of the California Model Community Noise Control Ordinance for rural environments, and with industrial noise regulations adopted by European jurisdictions. If the project would create an increase in ambient noise no greater than 10 dBA at nearby sensitive receptors, and the resulting noise level would be 40 dBA or less, the project noise level would likely be insignificant.

[2] Noise that draws legitimate complaint.

2. Location ST1: The nursery (Zalinda Farms Nursery). This location is approximately 2,600 feet east-northeast of the center of the project site. It was monitored for 12 minutes starting at 8:32 p.m. on April 18, again for 15 minutes starting at 2:00 a.m. on April 19, and finally for 16 minutes starting at 3:14 p.m., on April 19, 2007.

3. Location ST2: A residence located approximately 2,875 feet northeast of the center of the project site. This location was monitored for 15 minutes starting at 9:15 p.m. on April 18, 2007. The applicant attempted to measure the ambient noise levels at this location during the late-night and mid-day hours, but no data was recorded due to strong winds.

4. Location House B: A residence located approximately 3,675 feet north-northeast of the center of the project site. This location was not monitored, but the applicant has estimated the existing ambient noise levels at this location using values from similar locations and conditions.

5. Location House C: A residence located approximately 3,150 feet southeast of the center of the project site. This location was not monitored, but the applicant has estimated the existing ambient noise levels at this location using values from similar locations and conditions.

As explained above, the noise environment in the vicinity of the project site is dominated by transportation-related sources.

Noise Table 2 summarizes the ambient noise measurements at the nearest residential receptors (OGE 2008a, AFC §6.12.4.1, Tables 6.12-6, 6.12-7, 6.12-8, 6.12-9, Figure 6.12-2).

Noise Table 2
Summary of Measured Noise Levels

Measurement Site	Measured Noise Levels, dBA		
	Nighttime Hours L_{90}	Average During Daytime Hours L_{eq}	Average During Nighttime Hours L_{eq}
LT1, Residence 2,050 feet Northeast of the Site	27[1]	35-38	30-33
ST1, Nursery 2,600 feet East-northeast of the Site	33	54	59
ST2, Residence 2,875 feet Northeast of the Site	34	46	46
House B, Residence 3,675 feet North-northeast of the Site	27-30[2]	~35[2]	~30[2]
House C, Residence 3,150 feet Southeast of the Site	27-30[2]	~35[2]	~30[2]

Source: OGE 2008a, AFC §6.12.4.1, Tables 6.12-6, 6.12-7, 6.12-8, 6.12-9, Figure 6.12-2, Appendix 6.12-A
1. Calculations of average of four quietest consecutive hours of the nighttime
2. Estimated value; using measurement data from similar locations and conditions

DIRECT IMPACTS AND MITIGATION

Noise impacts associated with the project can be created by short-term construction activities and normal long-term operation of the project.

Construction Impacts and Mitigation

Construction noise is usually a temporary phenomenon. Construction of the OGP is expected to be typical of similar projects in terms of schedule, equipment used, and other types of activities (OGE 2008a, AFC §§1.3, 6.12.5.2).

Compliance with LORS

Construction of an industrial facility such as a power plant is typically noisier than permissible under usual noise ordinances. In order to allow the construction of new facilities, construction noise during certain hours of the day is commonly exempt from enforcement by local ordinances.

The applicant has predicted construction noise levels. They are summarized here in **Noise Table 3**.

Noise Table 3
Predicted Construction Noise Levels

Receptor	Project Noise Level (dBA)	Existing Ambient, Average Daytime L_{eq} (dBA)	Cumulative, Using Lowest Ambient Noise Level	Change in Ambient
LT1	48	35[1]	48	+13
ST1	27	54	54	0
ST2	44	46	48	+2
House B	41	~35	~42	+7
House C	28	~35	~36	+1

Sources: OGE 2008a, AFC §6.12.5.2, Table 6.12-15, Appendix 6.12-B; NOISE Table 2
[1] For conservatism, staff uses the lowest ambient noise level from NOISE Table 2, above.

Section 36.410 of the San Diego County Regulatory Ordinances limits construction to no louder than 75 dBA L_{eq} at the property lines of any noise-sensitive receptor. As seen above, in **Noise Table 3**, the project's construction activities would generate noise levels ranging from 27 dBA to 48 dBA at the project's noise-sensitive receptors, well below the above LORS limit.

The applicable local noise LORS limit noisy construction to daytime hours. Noisy construction work would be allowed only during the daytime hours of 7:00 a.m. to 7:00 p.m. on weekdays. To ensure that these hours are, in fact, enforced, staff proposes Condition of Certification **NOISE-6**.

Therefore, the noise impacts of the OGP construction activities would comply with the noise LORS.

CEQA Impacts

Since construction noise typically varies with time, it is most appropriately measured by, and compared with, the L_{eq} (energy average) metric.

As seen in **Noise Table 3** above, last column, the increases in the ambient noise levels at ST1, ST2, and House C would range from 0 dBA to 2 dBA. An increase of 2 dBA is not noticeable, and thus, the project's construction impacts at these locations would be less than significant.

Also as seen in **Noise Table 3**, the highest increase in the ambient noise level at House B would be 7 dBA. Thus, project construction would be audible at this residence. However, because construction is considered temporary in nature, and because it would occur only during the daytime hours, staff considers this impact to be less than significant.

Noise Table 3 also shows that the highest increase in the ambient noise level at LT1 would be 13 dBA. Project construction would be clearly audible at this location. However, due to the temporary nature of construction, and because construction would occur only during the daytime hours, staff considers this impact to be less than significant.

To ensure the project construction would create less than significant adverse impacts at the most noise-sensitive receptors, in addition to Condition of Certification **NOISE-6**, staff proposes Conditions of Certification **NOISE-1** and **NOISE-2**, which would establish a noise complaint process to resolve any complaints regarding construction noise.

In light of the above proposed conditions of certification, the noise impacts of the OGP construction activities would be less than significant.

Linear Facilities

New offsite linear facilities would include an approximately 2.4-mile long natural gas pipeline that would be connected to an existing San Diego Gas and Electric's main gas pipeline and an approximately 1/3-mile long underground electric transmission line that would be connected to the existing Pala Substation (OGE 2008a, AFC §§2.1, 6.12.5.2).

Construction of linear facilities typically moves along at a rapid pace, thus not subjecting any one receptor to noise impacts for more than two or three days. Further, construction activities would be limited to daytime hours. To ensure that these hours are, in fact, adhered to, in compliance with the LORS, staff proposes Condition of Certification **NOISE-6**.

Vibration

The only construction operation likely to produce vibration that could be perceived off site would be pile driving. The applicant anticipates that pile driving would not be required for construction of the OGP (OGE 2008a, AFC §6.12.5.2). Therefore, staff believes that no significant vibration impacts would be expected.

Worker Effects

The applicant has acknowledged the need to protect construction workers from noise hazards and has recognized the applicable LORS that would protect construction workers (OGE 2008a, AFC §6.12.5.2). To ensure that construction workers are, in fact, adequately protected, staff has proposed Condition of Certification **NOISE-3**.

Operation Impacts and Mitigation

The primary noise sources of the OGP include combustion turbine generators and their exhaust stacks, inlet air chillers, fuel gas compressors, electric transformers, and various pumps and fans. Staff compares the projected project noise with applicable LORS, in this case the San Diego County LORS. In addition, staff evaluates any increase in noise levels at sensitive receptors due to the project in order to identify any significant adverse impacts.

Proposed noise mitigation measures include the following (OGE 2008a, AFC §6.12.6, Appendix 6.12-C):

- 48-foot tall sound walls around gas turbines and inlet air chillers;
- 24-foot tall sound walls around fuel gas compressors;
- combustion turbine generator exhaust stack silencing;
- combustion turbine generator enclosure vent silencing; and
- black start generator enclosure.

In addition, the project would avoid the creation of annoying tonal (pure-tone) noises by balancing the noise emissions of various power plant features during plant design (OGE 2008a, AFC §6.12.5.3.1).

Compliance with LORS

The applicant performed noise modeling to determine the project's noise impacts on sensitive receptors (OGE 2008a, AFC §6.12.5.3, Tables 6.12-16, 6.12-17, 6.12-18, Figure 6.12-16, Appendix 6.12-C). The applicant has predicted operational noise levels; they are summarized in **Noise Table 4** and **Noise Table 5**, below.

Noise Table 4
Predicted Operational Noise Levels and Noise LORS

Receptor	Project Alone Operational Noise Level (dBA)	Existing Ambient, Average Daytime L_{eq} (dBA)[1]	Project Plus Daytime Ambient L_{eq} (dBA)	San Diego County Daytime L_{eq} Limit (dBA)	Cumulative (Project Plus Ambient) Compared to County Limit (dBA)	Existing Ambient, Average Nighttime L_{eq} (dBA)[1]	Project Plus Nighttime Ambient L_{eq} (dBA)	San Diego County Nighttime L_{eq} Limit (dBA)	Cumulative (Project Plus Ambient) Compared to County Limit (dBA)
LT1	31	35[2]	36	50	-14	30[2]	34	45	-11
ST1	24	54	54	50	Existing Ambient Exceeds LORS	59	59	45	Existing Ambient Exceeds LORS
ST2	18	46	46	50	-4	46	46	45	Existing Ambient Exceeds LORS
House B	25	~35	~35	50	-15	~30	31	45	-14
House C	27	~35	~36	50	-14	~30	32	45	-13

Sources: OGE 2008a, AFC §6.12.5.3, Tables 6.12-17, 6.12-18
[1] NOISE Table 2, above
[2] For conservatism, staff uses the lowest ambient noise level from NOISE Table 2, above.

As seen in **Noise Table 4**, above, the project's operational noise levels, when added to the existing daytime and nighttime ambient noise levels at the project's most-sensitive noise receptors, would result in levels that would be in compliance with the County's LORS limits.

Therefore, the project's operational noise impacts would be in compliance with the applicable LORS. To ensure compliance, staff proposes Condition of Certification **NOISE-4.**

CEQA Impacts

Power plant noise is unique. A power plant operates as, essentially, a steady, continuous, broadband noise source, unlike the intermittent sounds that make up most of the noise environment. Power plant noise therefore contributes to, and becomes a part of, background noise levels, or the sound heard when most intermittent noises stop. Where power plant noise is audible, it tends to define the background noise level. For this reason, staff typically compares projected power plant noise to existing ambient background (L_{90}) noise levels at affected sensitive receptors. If this comparison identifies a significant adverse impact, then feasible mitigation must be applied to the project to either reduce or remove that impact.

For residential receptors, staff evaluates project noise emissions by comparing them with nighttime ambient background levels; this evaluation assumes that the potential for public annoyance from power plant noise is greatest at night when residents are trying to sleep. Nighttime ambient noise levels are typically lower than daytime levels; differences in background noise levels of 5 to 10 dBA are common. Staff believes it is prudent to average the lowest nighttime hourly background noise levels to arrive at a reasonable baseline for comparison with the project's predicted noise level.

Adverse impacts on residential receptors can be identified by comparing predicted power plant noise levels with the nighttime ambient background noise levels at the nearest sensitive residential receptors.

The applicant has predicted operational noise levels; they are summarized here in **Noise Table 5**.

Noise Table 5
Predicted Operational Noise Levels and CEQA Guidelines

Receptor	Project Alone Operational Noise Level (dBA)	Existing Ambient, Lowest Nighttime L_{90} (dBA)[1]	Project Plus Ambient L_{90} (dBA)	Change in Ambient (dBA)
LT1	31	27	32	+5
ST1	24	33	34	+1
ST2	18	34	34	0
House B	25	27[2]	29	+2
House C	27	27[2]	30	+3

Sources: OGE 2008a, AFC §6.12.5.3, Table 6.12-16
[1] NOISE Table 2, above
[2] For conservatism, staff uses the lowest ambient noise level from NOISE Table 2, above.

Combining the ambient noise level of 27 dBA L_{90} (**Noise Table 5**, above) with the project noise level of 31 dBA at LT1 would result in 32 dBA L_{90}, 5 dBA above the ambient. Such an increase is generally noticeable. However, as described above (below the **METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE** subheading), staff regards an increase of up to 5 dBA as a less-than-significant impact. Therefore, staff considers the above noise impact at LT1 to be less than significant.

Combining the ambient noise level of 33 dBA L_{90} (**Noise Table 5**) with the project noise level of 24 dBA at ST1 would result in 34 dBA L_{90}, 1 dBA above the ambient. Such an increase is not noticeable. Thus, the project would have no adverse noise impact at this location.

Combining the ambient noise level of 34 dBA L_{90} (**Noise Table 5**) with the project noise level of 18 dBA at ST2 would result in 34 dBA L_{90}. The project would not affect the nighttime ambient noise at this location (the project would be inaudible). Thus, the project would have no adverse noise impact at ST2.

Combining the ambient noise level of 27 dBA L_{90} (**Noise Table 5**, above) with the project noise level of 25 dBA at House B would result in 29 dBA L_{90}, 2 dBA above the ambient. Such an increase is barely noticeable. Staff regards an increase of up to 5 dBA as a less-than-significant impact. Therefore, staff considers the above noise impact at House B to be less than significant.

Combining the ambient noise level of 27 dBA L_{90} (**Noise Table 5**, above) with the project noise level of 27 dBA at House C would result in 30 dBA L_{90}, 3 dBA above the ambient. Such an increase is barely noticeable. Staff regards an increase of up to 5 dBA as a less-than-significant impact. Therefore, staff considers the above noise impact at House C to be less than significant.

Staff proposes Condition of Certification **NOISE-4** to ensure that the noise levels due to the project operation would not create significant noise impacts at these locations.

Tonal Noises

One possible source of annoyance could be strong tonal noises. Tonal noises are individual sounds (such as pure tones) which, while not louder than permissible levels, stand out in sound quality. The applicant plans to address overall noise in project design, and to take appropriate measures, as needed, to eliminate tonal noises as possible sources of annoyance (OGE 2008a, AFC §6.12.5.3.1). To ensure that tonal noises do not cause public annoyance, staff proposes Condition of Certification **NOISE-4**.

Linear Facilities

All linear facilities would be underground and therefore silent during plant operation. Noise effects from electrical interconnection lines typically do not extend beyond the lines' right-of-way easements and would be inaudible to receptors.

Vibration

Vibration from an operating power plant could be transmitted through two primary means: ground (ground-borne vibration), and air (airborne vibration).

The operating components of a simple cycle power plant consist of high-speed gas turbines, gas compressors, and various pumps. All of these pieces of equipment must be carefully balanced in order to operate; permanent vibration sensors are attached to the turbines and generators. Gas turbine generator facilities using the GE LM6000 machine have not resulted in ground-borne or airborne vibration impacts. Energy Commission staff agrees with the applicant that ground-borne vibration from the OGP would be undetectable by any likely receptor.

Airborne vibration (low frequency noise) can rattle windows and objects on shelves, and can rattle the walls of lightweight structures. The OGP's chief source of airborne vibration would be the gas turbines' exhaust. In a power plant such as the OGP, however, the exhaust must pass through the selective catalytic reduction units (SCRs) and the stack silencers before it reaches the atmosphere. The SCRs act as efficient mufflers. The combination of SCRs and stack silencers makes it highly unlikely that the OGP would cause perceptible airborne vibration effects.

Worker Effects

The applicant acknowledges the need to protect plant operating and maintenance workers from noise hazards and commits to compliance with all applicable LORS (OGE 2008a, AFC §§6.12.3.2, 6.12.6). Signs would be posted in areas of the plant with noise levels exceeding 85 dBA (the level that OSHA recognizes as a threat to workers' hearing), and hearing protection would be required and provided. To ensure that plant operation and maintenance workers are adequately protected, Energy Commission staff has proposed Condition of Certification **NOISE-5**.

CUMULATIVE IMPACTS AND MITIGATION

Section 15130 of the CEQA guidelines (Cal. Code Regs., tit. 14) requires a discussion of cumulative environmental impacts. Cumulative impacts are two or more individual impacts that, when considered together, compound or increase other environmental impacts. CEQA guidelines require that this discussion reflect the severity of the impacts and the likelihood of their occurrence, but do not need to provide as much detail as the discussion of impacts solely attributable to the project.

In the AFC, the applicant has listed 12 projects that could potentially create cumulative adverse environmental impacts when combined with the OGP (OGE 2008a, AFC §§6.1.2, 6.12.5.3.4). However, these projects are either located too far from the OGP site for noise impacts to accumulate, or are not considered reasonably foreseeable projects. Therefore, staff does not consider these projects to create cumulative noise impacts when combined with the OGP.

Staff is not aware of any other projects which, when combined with the OGP, would create direct cumulative noise impacts in the project area. Therefore, the project's cumulative noise impact is considered to be less than significant.

FACILITY CLOSURE

All operational noise from the project would cease when the OGP closes, and no further adverse noise impact from its operation would be possible. The remaining potential temporary noise source would be the dismantling of the project structures and equipment, as well as any site restoration work that may be performed. Since this noise would be similar to that caused by the original construction, it could be similarly treated -- that is, noisy work could be performed during daytime hours with machinery and equipment that are properly equipped with mufflers. Any noise LORS in existence at that time would apply. Unless modified, applicable conditions of certification included in the Energy Commission decision would also apply.

RESPONSES TO AGENCY AND PUBLIC COMMENTS

No agency or public comments in the area of **Noise and Vibration** have been received.

CONCLUSIONS

Staff concludes that the OGP, if built and operated in conformance with the proposed conditions of certification below, would comply with all applicable noise and vibration LORS and would produce no significant adverse noise impacts on people within the project area, including the minority population, directly, indirectly, or cumulatively.

PROPOSED CONDITIONS OF CERTIFICATION

NOISE-1 At least 15 days prior to the start of ground disturbance, the project owner shall notify all residents within one mile of the project site and one-half mile of the linear facilities, by mail or by other effective means, of the commencement of project construction. At the same time, the project owner shall establish a telephone number for use by the public to report any undesirable noise conditions associated with the construction and operation of the project. If the telephone is not staffed 24 hours a day, the project owner shall include an automatic answering feature, with date and time stamp recording, to answer calls when the phone is unattended. This telephone number shall be posted at the project site during construction where it is visible to passersby. This telephone number shall be maintained until the project has been operational for at least one year.

Verification: Prior to ground disturbance, the project owner shall transmit to the compliance project manager (CPM) a statement, signed by the project owner's project manager, stating that the above notification has been performed, and describing the method of that notification. This communication shall also verify that the telephone number has been established and posted at the site, and shall provide that telephone number.

NOISE COMPLAINT PROCESS

NOISE-2 Throughout the construction and operation of the project, the project owner shall document, investigate, evaluate, and attempt to resolve all project-related noise complaints. The project owner or authorized agent shall:

- use the Noise Complaint Resolution Form (below), or a functionally equivalent procedure acceptable to the CPM, to document and respond to each noise complaint;
- attempt to contact the person(s) making the noise complaint within 24 hours;
- conduct an investigation to determine the source of noise in the complaint;
- if the noise is project related, take all feasible measures to reduce the source of the noise; and
- submit a report documenting the complaint and actions taken. The report shall include: a complaint summary, including the final results of noise reduction efforts and, if obtainable, a signed statement by the complainant stating that the noise problem has been resolved to the complainant's satisfaction.

Verification: Within five days of receiving a noise complaint, the project owner shall file a Noise Complaint Resolution Form, shown below, with both the local jurisdiction and the CPM that documents the resolution of the complaint. If mitigation is required to resolve the complaint, and the complaint is not resolved within a three-day period, the project owner shall submit an updated Noise Complaint Resolution Form when the mitigation is performed and complete.

NOISE-3 The project owner shall submit to the CPM for review and approval a noise control program. The noise control program shall be used to reduce employee exposure to high (above permissible) noise levels during construction in accordance to the applicable OSHA and Cal-OSHA standards.

Verification: At least 30 days prior to the start of ground disturbance, the project owner shall submit the noise control program to the CPM. The project owner shall make the program available to Cal-OSHA upon request.

NOISE RESTRICTIONS

NOISE-4 The project design and implementation shall include appropriate noise mitigation measures adequate to ensure operation of the project will not cause the noise levels due to plant operation alone, during the four quietest consecutive hours of the nighttime, to exceed an average of 31 dBA measured at or near monitoring location LT1 (approximately 2,050 feet northeast of the center of the project site), an average of 24 dBA measured at or near monitoring location ST1 (the nursery), an average of 18 dBA measured at or near monitoring location ST2 (approximately 2,875 feet northeast of the center of the project site), an average of 25 dBA measured at or near monitoring location House B (approximately 3,675 feet north-northeast of the center of the project site), and an average of 27 dBA

measured at or near monitoring location House C (approximately 3,150 feet southeast of the center of the project site).

No new pure-tone components shall be caused by the project. No single piece of equipment shall be allowed to stand out as a source of noise that draws legitimate complaints.

A. When the project first achieves a sustained output of 85% or greater of rated capacity, the project owner shall conduct a 25-hour community noise survey at monitoring location LT1, or at a closer location acceptable to the CPM. This survey during the power plant's full-load operation shall also include measurement of one-third octave band sound pressure levels to ensure that no new pure-tone noise components have been caused by the project.

   During the period of this survey, the project owner shall conduct a short-term survey of noise at monitoring locations ST1, ST2, House B, and House C, or at closer locations acceptable to the CPM. The short-term noise measurements at these locations shall be conducted during the nighttime hours of 10:00 p.m. to 7:00 a.m.

   The measurement of power plant noise for the purposes of demonstrating compliance with this condition of certification may alternatively be made at a location, acceptable to the CPM, closer to the plant (e.g., 400 feet from the plant boundary) and this measured level then mathematically extrapolated to determine the plant noise contribution at the affected residence. The character of the plant noise shall be evaluated at the affected receptor locations to determine the presence of pure tones or other dominant sources of plant noise.

B. If the results from the noise survey indicate that the power plant noise at the affected receptor sites exceeds the above values during the four quietest consecutive hours of the nighttime, mitigation measures shall be implemented to reduce noise to a level of compliance with these limits.

C. If the results from the noise survey indicate that pure tones are present, mitigation measures shall be implemented to eliminate the pure tones.

Verification: The survey shall take place within 30 days of the project first achieving a sustained output of 85% or greater of rated capacity. Within 15 days after completing the survey, the project owner shall submit a summary report of the survey to the CPM. Included in the survey report will be a description of any additional mitigation measures necessary to achieve compliance with the above listed noise limits, and a schedule, subject to CPM approval, for implementing these measures. When these measures are in place, the project owner shall repeat the noise survey.

Within 15 days of completion of the new survey, the project owner shall submit to the CPM a summary report of the new noise survey, performed as described above and showing compliance with this condition.

NOISE-5 Following the project's attainment of a sustained output of 85% or greater of its rated capacity, the project owner shall conduct an occupational noise survey to identify any noise hazardous areas in the facility.

The survey shall be conducted by a qualified person in accordance with the provisions of Title 8, California Code of Regulations, sections 5095-5099 (Article 105) and Title 29, Code of Federal Regulations, section 1910.95. The survey results shall be used to determine the magnitude of employee noise exposure.

The project owner shall prepare a report of the survey results and, if necessary, identify proposed mitigation measures to be employed in order to comply with the applicable California and federal regulations.

Verification: Within 30 days after completing the survey, the project owner shall submit the noise survey report to the CPM. The project owner shall make the report available to OSHA and Cal-OSHA upon request.

CONSTRUCTION RESTRICTIONS

NOISE-6 Heavy equipment operation and noisy construction work relating to any project features shall be restricted to the times delineated below, unless a special permit has been issued by San Diego County:

Mondays through Fridays:	7:00 a.m. to 7:00 p.m.
Weekends and federal holidays:	No Construction Allowed

Haul trucks and other engine-powered equipment shall be equipped with adequate mufflers. Haul trucks shall be operated in accordance with posted speed limits. Truck engine exhaust brake use shall be limited to emergencies.

Verification: Prior to ground disturbance, the project owner shall transmit to the CPM a statement acknowledging that the above restrictions will be observed throughout the construction of the project.

Exhibit 1
Noise Complaint Resolution Form

Orange Grove Project
(08-AFC-4)

NOISE COMPLAINT LOG NUMBER _____

Complainant's name and address:

Phone number: _____

Date complaint received: _____
Time complaint received: _____

Nature of noise complaint:

Definition of problem after investigation by plant personnel:

Date complainant first contacted: _____

Initial noise levels at 3 feet from noise source _____ dBA Date: _____

Initial noise levels at complainant's property: _____ dBA Date: _____

Final noise levels at 3 feet from noise source: _____ dBA Date: _____

Final noise levels at complainant's property: _____ dBA Date: _____

Description of corrective measures taken:

Complainant's signature: _____ Date: _____

Approximate installed cost of corrective measures: $ _____
Date installation completed: _____
Date first letter sent to complainant: _____ (copy attached)
Date final letter sent to complainant: _____ (copy attached)

This information is certified to be correct:

Plant Manager's Signature: _____

Attach additional pages and supporting documentation, as required.

REFERENCES

County 2008 – County of San Diego Code of Regulatory Ordinances, Title 3, Public Safety.

OGE 2008a – OGE/S. Thome (tn46770) Application for Certification for Orange Grove Project (by Orange Grove Energy) dated 6/19/08. Submitted to Dockets on 6/19/08.

NOISE APPENDIX A
FUNDAMENTAL CONCEPTS OF COMMUNITY NOISE

To describe noise environments and to assess impacts on noise sensitive area, a frequency weighting measure, which simulates human perception, is customarily used. It has been found that A-weighting of sound intensities best reflects the human ear's reduced sensitivity to low frequencies and correlates well with human perceptions of the annoying aspects of noise. The A-weighted decibel scale (dBA) is cited in most noise criteria. Decibels are logarithmic units that conveniently compare the wide range of sound intensities to which the human ear is sensitive. **Noise Table A1** provides a description of technical terms related to noise.

Noise environments and consequences of human activities are usually well represented by an equivalent A-weighted sound level over a given time period (L_{eq}), or by average day and night A-weighted sound levels with a nighttime weighting of 10 dBA (L_{dn}). Noise levels are generally considered low when ambient levels are below 45 dBA, moderate in the 45 to 60 dBA range, and high above 60 dBA. Outdoor day-night sound levels vary over 50 dBA depending on the specific type of land use. Typical L_{dn} values might be 35 dBA for a wilderness area, 50 dBA for a small town or wooded residential area, 65 to 75 dBA for a major metropolis downtown (e.g., San Francisco), and 80 to 85 dBA near a freeway or airport. Although people often accept the higher levels associated with very noisy urban residential and residential-commercial zones, they nevertheless are considered to be levels of noise adverse to public health.

Various environments can be characterized by noise levels that are generally considered acceptable or unacceptable. Lower levels are expected in rural or suburban areas than what would be expected for commercial or industrial zones. Nighttime ambient levels in urban environments are about seven decibels lower than the corresponding average daytime levels. The day-to-night difference in rural areas away from roads and other human activity can be considerably less. Areas with full-time human occupation that are subject to nighttime noise, which does not decrease relative to daytime levels, are often considered objectionable. Noise levels above 45 dBA at night can result in the onset of sleep interference effects. At 70 dBA, sleep interference effects become considerable (Effects of Noise on People, U.S. Environmental Protection Agency, December 31, 1971).

In order to help the reader understand the concept of noise in decibels (dBA), **Noise Table A2** has been provided to illustrate common noises and their associated sound levels, in dBA.

Noise Table A1
Definition of Some Technical Terms Related to Noise

Terms	Definitions
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a Sound Level Meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this testimony are A-weighted.
L_{10}, L_{50}, & L_{90}	The A-weighted noise levels that are exceeded 10%, 50%, and 90% of the time, respectively, during the measurement period. L_{90} is generally taken as the background noise level.
Equivalent Noise Level, L_{eq}	The energy average A-weighted noise level during the Noise Level measurement period.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 4.8 decibels to levels in the evening from 7 p.m. to 10 p.m., and after addition of 10 decibels to sound levels in the night between 10 p.m. and 7 a.m.
Day-Night Level, L_{dn} or DNL	The Average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10 p.m. and 7 a.m.
Ambient Noise Level	The composite of noise from all sources, near and far. The normal or existing level of environmental noise at a given location (often used for an existing or pre-project noise condition for comparison study).
Intrusive Noise	That noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.
Pure Tone	A pure tone is defined by the Model Community Noise Control Ordinance as existing if the one-third octave band sound pressure level in the band with the tone exceeds the arithmetic average of the two contiguous bands by 5 decibels (dB) for center frequencies of 500 Hz and above, or by 8 dB for center frequencies between 160 Hz and 400 Hz, or by 15 dB for center frequencies less than or equal to 125 Hz.

Source: Guidelines for the Preparation and Content of Noise Elements of the General Plan, Model Community Noise Control Ordinance, California Department of Health Services 1976, 1977.

Noise Table A2
Typical Environmental and Industry Sound Levels

Noise Source (at distance)	A-Weighted Sound Level in Decibels (dBA)	Noise Environment	Subjective Impression
Civil Defense Siren (100')	140-130		Pain Threshold
Jet Takeoff (200')	120		Very Loud
Very Loud Music	110	Rock Music Concert	
Pile Driver (50')	100		
Ambulance Siren (100')	90	Boiler Room	
Freight Cars (50')	85		
Pneumatic Drill (50')	80	Printing Press Kitchen with Garbage Disposal Running	Loud
Freeway (100')	70		Moderately Loud
Vacuum Cleaner (100')	60	Data Processing Center Department Store/Office	
Light Traffic (100')	50	Private Business Office	
Large Transformer (200')	40		Quiet
Soft Whisper (5')	30	Quiet Bedroom	
	20	Recording Studio	
	10		Threshold of Hearing

Source: Handbook of Noise Measurement, Arnold P.G. Peterson, 1980

Subjective Response to Noise

The adverse effects of noise on people can be classified into three general categories:

- Subjective effects of annoyance, nuisance, dissatisfaction.
- Interference with activities such as speech, sleep, and learning.
- Physiological effects such as anxiety or hearing loss.

The sound levels associated with environmental noise, in almost every case, produce effects only in the first two categories. Workers in industrial plants can experience noise effects in the last category. There is no completely satisfactory way to measure the subjective effects of noise, or of the corresponding reactions of annoyance and dissatisfaction, primarily because of the wide variation in individual tolerance of noise.

One way to determine a person's subjective reaction to a new noise is to compare the level of the existing (background) noise, to which one has become accustomed, with the level of the new noise. In general, the more the level or the tonal variations of a new noise exceed the previously existing ambient noise level or tonal quality, the less acceptable the new noise will be, as judged by the exposed individual.

With regard to increases in A-weighted noise levels, knowledge of the following relationships can be helpful in understanding the significance of human exposure to noise.

1. Except under special conditions, a change in sound level of one dB cannot be perceived.

2. Outside of the laboratory, a three dB change is considered a barely noticeable difference.

3. A change in level of at least five dB is required before any noticeable change in community response would be expected.

4. A ten dB change is subjectively heard as an approximate doubling in loudness and almost always causes an adverse community response. (Kryter, Karl D., The Effects of Noise on Man, 1970).

Combination of Sound Levels

People perceive both the level and frequency of sound in a non-linear way. A doubling of sound energy (for instance, from two identical automobiles passing simultaneously) creates a three dB increase (i.e., the resultant sound level is the sound level from a single passing automobile plus three dB). The rules for decibel addition used in community noise prediction are:

Noise Table A3
Addition of Decibel Values

When two decibel values differ by:	Add the following amount to the larger value
0 to 1 dB	3 dB
2 to 3 dB	2 dB
4 to 9 dB	1 dB
10 dB or more	0
Figures in this table are accurate to ± 1 dB.	

Source: Architectural Acoustics, M. David Egan, 1988

Sound and Distance

Doubling the distance from a noise source reduces the sound pressure level by six dB.

Increasing the distance from a noise source 10 times reduces the sound pressure level by 20 dB.

Worker Protection

OSHA noise regulations are designed to protect workers against the effects of noise exposure, and list permissible noise level exposure as a function of the amount of time to which the worker is exposed.

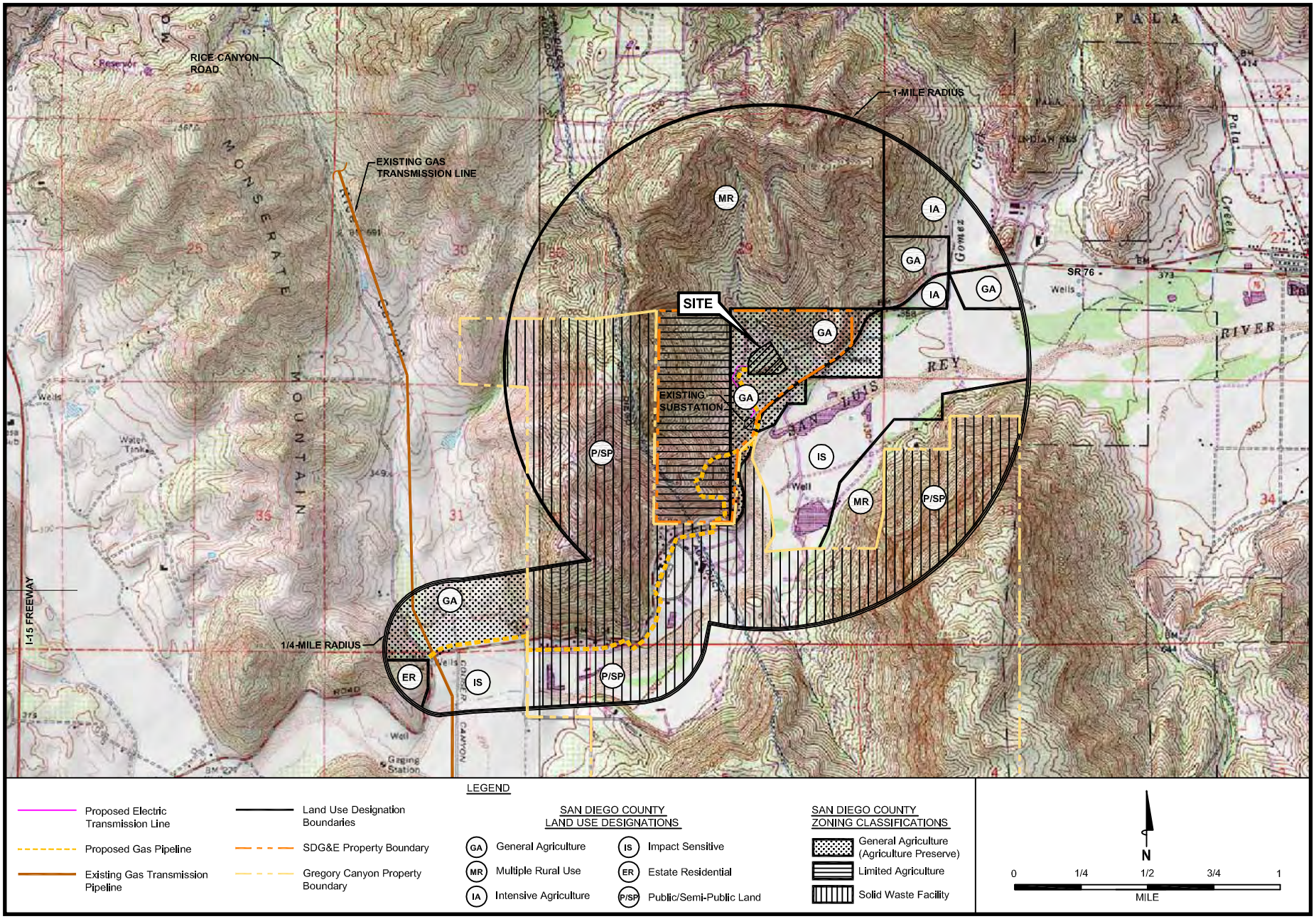
Noise Table A4
OSHA Worker Noise Exposure Standards

Duration of Noise (Hrs/day)	A-Weighted Noise Level (dBA)
8.0	90
6.0	92
4.0	95
3.0	97
2.0	100
1.5	102
1.0	105
0.5	110
0.25	115

Source: 29 C.F.R. § 1910.

NOISE AND VIBRATION - FIGURE 1

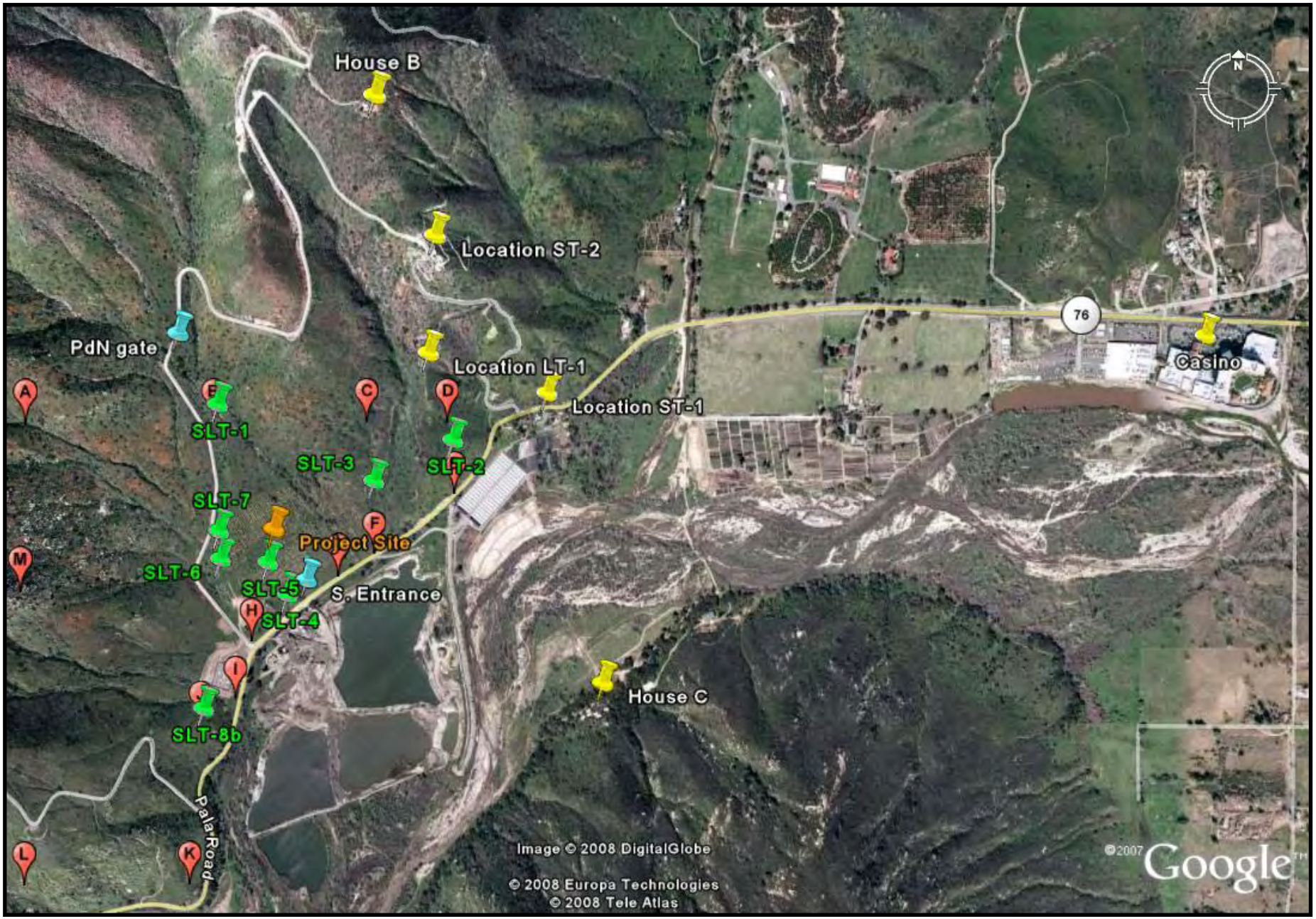
Orange Grove Project - Land Use Designations and Zoning



SOURCE: AFC Figure 6.9-2A

NOISE AND VIBRATION - FIGURE 2

Orange Grove Project - Supplemental Ambient Measurement Location Map



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION, NOVEMBER 2008

SOURCE: AFC Figure 6.12-4

PUBLIC HEALTH

Testimony of Alvin J. Greenberg, Ph.D.

SUMMARY OF CONCLUSIONS

Staff has analyzed potential public health risks associated with construction and operation of the Orange Grove Project (OGP) and does not expect any significant adverse cancer or short- or long-term noncancer health effects from project toxic emissions. Staff's analysis of potential health impacts from the proposed OGP uses a highly conservative methodology that accounts for impacts to the most sensitive individuals in a given population, including newborns and infants. According to the results of staff's health risk assessment, emissions from the OGP would not contribute significantly to morbidity or mortality in any age or ethnic group residing in the project area.

INTRODUCTION

The purpose of this Final Staff Assessment (FSA) is to determine if emissions of toxic air contaminants (TACs) from the proposed OGP would have the potential to cause significant adverse public health impacts or to violate standards for public health protection. If potentially significant health impacts are identified, staff will evaluate mitigation measures to reduce such impacts to insignificant levels.

California Energy Commission (Energy Commission) staff addresses potential impacts of regulated or criteria air pollutants in the **AIR QUALITY** section of this FSA, and impacts on public and worker health from accidental releases of hazardous materials are examined in the **HAZARDOUS MATERIALS MANAGEMENT** section. Health effects from electromagnetic fields are discussed in the **TRANSMISSION LINE SAFETY AND NUISANCE** section. Pollutants released from the project in wastewater streams to the public sewer system are discussed in the **SOIL AND WATER RESOURCES** section. Plant releases in the form of hazardous and nonhazardous wastes are described in the **WASTE MANAGEMENT** section.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Public Health Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable Law	Description
Federal	
Clean Air Act section 112 (Title 42, U.S. Code section 7412)	The National Emissions Standards for Hazardous Air Pollutants (NESHAP) requires new sources that emit more than 10 tons per year of any specified Hazardous Air Pollutant (HAP) or more than 25 tons per year of any combination of HAPs to apply Maximum Achievable Control Technology.
State	
California Health and Safety Code section 25249.5 et seq. (Proposition 65)	These sections establish thresholds of exposure to carcinogenic substances above which Prop 65 exposure warnings are required.
California Health and Safety Code section 41700	This section states that "no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property."
California Code of Regulations, Title 22, Section 60306	Requires that whenever a cooling system uses recycled water in conjunction with an air conditioning facility and a cooling tower that creates a mist that could come into contact with employees or members of the public, a drift eliminator shall be used and chlorine, or other, biocides shall be used to treat the cooling system recirculating water to minimize the growth of Legionella and other micro-organisms.
California Public Resource Code section 25523(a); Title 20 California Code of Regulations (CCR) section 1752.5, 2300–2309 and Division 2 Chapter 5, Article 1, Appendix B, Part (1); California Clean Air Act, Health and Safety Code section 39650, et seq.	These regulations require a quantitative health risk assessment for new or modified sources, including power plants that emit one or more toxic air contaminants (TACs).
Local	
San Diego Air Pollution Control District (SDCAPCD) Rule 51	This rule states that no source shall cause injury, detriment, nuisance or annoyance to the public, which could endanger their comfort, repose, health and safety, or property.
SDCAPCD Rule 1200	This rule requires the use of Best Available Control Technology for Toxics (T-BACT) for major sources of emissions.
SDCAPCD Rule 1210	This rule implements the California Airborne Toxic Control Measures (ATCM).

SETTING

This section describes the environment in the vicinity of the proposed project site from the public health perspective. Characteristics of the natural environment, such as meteorology and terrain, affect the project's potential for causing impacts on public health. An emissions plume from a facility may affect elevated areas before lower terrain areas due to a reduced opportunity for atmospheric mixing. Consequently, areas of elevated terrain can often be subjected to increased pollutant impacts. Also, the types of land use near a site influence the surrounding population distribution and density, which, in turn, affect public exposure to project emissions. Additional factors affecting potential public health impacts include existing air quality and environmental site contamination.

SITE AND VICINITY DESCRIPTION

The project site is located approximately two miles west of Pala and approximately two miles east of Interstate 15 in north San Diego County. Land in the vicinity of the proposed project is rural, with mostly agricultural and open space uses. Several rural residences are also located in the project area (OGE 2008a, Section 6.16.1). The natural gas pipeline proposed for construction for this project would be approximately 2.4 miles long, running west from the OGP site to a connection with the San Diego Gas and Electric (SDG&E) gas main (OGE 2008a, Section 2.5.2). Residences and other public receptors (commercial uses) in the project vicinity (within a 1.86-mile radius) are shown in Figure 6.16-2 (OGE 2008a). There are no sensitive receptors within this area of study. The nearest sensitive receptor is the Vivian Banks Charter School located approximately two miles west of the site. The nearest public receptors are commercial uses located on the property boundary south and west of the project site (OGE 2008a, Section 6.16.2 and Figure 6.16-2).

The OGP would have two stacks, each 80 feet high (OGE 2008a, Section 6.16.1). The location of elevated terrain (above the stack height) is important in assessing potential exposure, as an emission plume may impact high elevations before impacting lower elevations. The site's elevation is about 420 feet above mean sea level, and the topography of the immediate vicinity slopes gently upward. Terrain above stack height exists to the north, east, and west of the project where, within a half a mile, the hills begin rising relatively steeply, reaching between 1,000 and 1,500 feet elevation within about a mile from the site (OGE 2008a, Section 6.16.1 and Figure 6.16-1).

METEOROLOGY

Meteorological conditions, including wind speed, wind direction, and atmospheric stability, affect the extent to which pollutants are dispersed into ambient air as well as the direction of pollutant transport. This, in turn, affects the level of public exposure to emitted pollutants and associated health risks. When wind speeds are low and the atmosphere is stable, for example, dispersion is reduced, and localized exposure may be increased.

The climate at the project site is characterized by dry, warm summers and mild winters. The overall climate at the project site is dominated by the semi-permanent eastern Pacific high pressure system centered off the coast of California. In the summer, the

high pressure system moves to its northernmost position, which results in strong northwesterly flows and light precipitation. In the winter, the high pressure system moves southwestward toward Hawaii, which allows storms originating in the Gulf of Alaska to reach northern California, bringing wind and rain. The prevailing winds in the project area are from the west and southwest with an average wind speed of 2.18 meters per second recorded during 2002 and 2003 (OGE 2008a, Section 6.16.1). Quarterly wind roses for the region are provided in Appendix 6.2-A of the AFC (OGE 2008a).

Atmospheric stability is a measure related to turbulence, or the ability of the atmosphere to disperse pollutants due to convective air movement. Mixing heights (the height above ground level through which the air is well mixed and in which pollutants can be dispersed) are lower during mornings due to temperature inversions and increase during the warmer afternoons. Staff's **AIR QUALITY** section presents more detailed meteorological data.

EXISTING AIR QUALITY

The proposed site is within the jurisdiction of the San Diego County Air Pollution Control District (SDCAPCD). By examining average toxic concentration levels from representative air monitoring sites with cancer risk factors specific to each contaminant, lifetime cancer risk can be calculated to provide a background risk level for inhalation of ambient air. For comparison purposes, it should be noted that the overall lifetime cancer risk for the average individual in the United States is about 1 in 3, or 333,000 in 1 million.

The SDCAPCD air monitoring site closest to the project is the Escondido Monitoring Station, located approximately 16 miles south of Pala. This station is about the same distance from the ocean as the OGP site and provides a conservative representation of the air quality at the OGP site since the Escondido area is more heavily industrial (OGE 2008a, Section 6.2.2.2). Based on the air quality data collected at this station in the last several years, the applicant estimates average annual background concentrations of PM10 at 26.9 $\mu g/m^3$ and PM2.5 at 13.4 $\mu g/m^3$ (OGE 2008a, Table 6.2-4).

The San Diego County APCD does not have data on ambient airborne toxic air contaminants as the monitoring stations were recently installed and the data is currently under review. The nearest CARB air toxics monitoring stations that actively report values are located at El Cajon and Chula Vista, approximately 35 miles southeast and 40 miles south of Pala, respectively. Although staff does not consider these locations to be representative of air quality in the OGP area, they do serve to show the upper-bound levels of toxic air contaminants found in the SDCAPCD. In 2007, the background cancer risk calculated by the California Air Resources Board (CARB) for the El Cajon site was 119 in one million and for the Chula Vista site, the background cancer risk was 77 in one million (CARB 2008). The pollutants 1,3-butadiene and benzene, emitted primarily from mobile sources, were the two highest contributors to risk and together accounted for over half of the total at each site. The risk from 1,3-butadiene was about 34 in one million at El Cajon and 21 in a million at Chula Vista, while the risk from benzene was about 44 in one million at El Cajon and 25 in one million at Chula Vista. Formaldehyde accounts for about 16% of the 2007 average calculated cancer risk based on air toxics

monitoring results for the El Cajon and Chula Vista stations, with a risk of about 19 and 13 in one million, respectively. Formaldehyde is emitted directly from vehicles and other combustion sources, such as the proposed OGP.

The use of reformulated gasoline, beginning in the second quarter of 1996, as well as other toxics reduction measures, have led to a decrease of ambient levels of toxics and associated cancer risk in all areas of California during the past few years. For example, in one large air district, cancer risk was 342 in one million based on 1992 data and in 2002, the average inhalation cancer risk decreased to 162 in one million (BAAQMD 2004, p. 12). Similar reductions occurred throughout the state's major metropolitan areas. In comparison to these "background" risks from all stationary and mobile sources, staff has estimated the theoretical maximum cancer risk as a result of all emissions from the proposed OGP to be 0.64 in one million, a value less than 1% of the existing background cancer risk found in Chula Vista.

EXISTING PUBLIC HEALTH CONCERNS

When evaluating a new project, staff attempts to conduct a study and analysis of existing public health issues in the project vicinity. This analysis is prepared in order to identify the current status of respiratory diseases (including asthma), cancer, and childhood mortality rates in the population located near the proposed project. Assessing existing health concerns in the project area will provide staff with a basis on which to evaluate the significance of any additional health impacts from the proposed OGP and evaluate any proposed mitigation. According to the San Diego County Health and Human Services Agency, the Hazardous Materials Division of the County of San Diego Department of Environmental Health, and the SDCAPCD, there are no known health studies conducted in the project area (OGE 2008a, Section 6.16.3).

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

The **PUBLIC HEALTH** section of this staff assessment discusses toxic emissions to which the public could be exposed during project construction and routine operation. Following the release of toxic contaminants into the air or water, people may come into contact with them through inhalation, dermal contact, or ingestion via contaminated food or water.

Air pollutants for which no ambient air quality standards have been established are called noncriteria pollutants. Unlike criteria pollutants such as ozone, carbon monoxide, sulfur dioxide, or nitrogen dioxide, noncriteria pollutants have no ambient (outdoor) air quality standards that specify levels considered safe for everyone.

Since noncriteria pollutants do not have such standards, a health risk assessment is used to determine if people might be exposed to those types of pollutants at unhealthy levels. The risk assessment consists of the following steps:

- identify the types and amounts of hazardous substances that OGP could emit to the environment;

- estimate worst-case concentrations of project emissions in the environment using dispersion modeling;
- estimate amounts of pollutants that people could be exposed to through inhalation, ingestion, and dermal contact; and
- characterize potential health risks by comparing worst-case exposure to safe standards based on known health effects.

Staff relies upon the expertise of the California Environmental Protection Agency (Cal/EPA) Office of Environmental Health Hazard Assessment (OEHHA) to identify contaminants that are known to the state to cause cancer or other noncancer toxicological endpoints and to calculate the toxicity and cancer potency factors of these contaminants. Staff also relies upon the expertise of the California Air Resources Board and the local air districts to conduct ambient air monitoring of toxic air contaminants and the state Department of Public Health to conduct epidemiological investigations into the impacts of pollutants on communities. It is not within the purview or the expertise of the Energy Commission staff to duplicate the expertise and statutory responsibility of these agencies.

Initially, a screening level risk assessment is performed using simplified assumptions that are intentionally biased toward protection of public health. That is, an analysis is designed that overestimates public health impacts from exposure to project emissions. In reality, it is likely that the actual risks from the power plant will be much lower than the risks as estimated by the screening level assessment. The risks for screening purposes are based on examining conditions that would lead to the highest, or worst-case, risks and then using those conditions in the study. Such conditions include:

- using the highest levels of pollutants that could be emitted from the plant;
- assuming weather conditions that would lead to the maximum ambient concentration of pollutants;
- using the type of air quality computer model which predicts the greatest plausible impacts;
- calculating health risks at the location where the pollutant concentrations are estimated to be the highest;
- assuming that an individual's exposure to cancer-causing agents occurs continuously for 70 years; and
- using health-based standards designed to protect the most sensitive members of the population (i.e., the young, elderly, and those with respiratory illnesses).

A screening level risk assessment will, at a minimum, include the potential health effects from inhaling hazardous substances. Some facilities may also emit certain substances that could present a health hazard from noninhalation pathways of exposure (OEHHA 2003, Tables 5.1, 6.3, 7.1). When these substances are present in facility emissions, the screening level analysis includes the following additional exposure pathways: soil ingestion, dermal exposure, and mother's milk (OEHHA 2003, p. 5-3).

The risk assessment process addresses three categories of health impacts: acute (short-term) health effects, chronic (long-term) noncancer effects, and cancer risk (also long-term). Acute health effects result from short-term (one-hour) exposure to relatively high concentrations of pollutants. Acute effects are temporary in nature and include symptoms such as irritation of the eyes, skin, and respiratory tract.

Chronic health effects are those that arise as a result of long-term exposure to lower concentrations of pollutants. The exposure period is considered to be approximately from 12-100% of a lifetime, or from 8 to 70 years (OEHHA 2003, p. 6-5). Chronic health effects include diseases such as reduced lung function and heart disease.

The analysis for noncancer health effects compares the maximum project contaminant levels to safe levels called *Reference Exposure Levels*, or RELs. These are amounts of toxic substances to which even sensitive people can be exposed and suffer no adverse health effects (OEHHA 2003, p. 6-2). These exposure levels are designed to protect the most sensitive individuals in the population, such as infants, the aged, and people suffering from illness or disease which makes them more sensitive to the effects of toxic substance exposure. The Reference Exposure Levels are based on the most sensitive adverse health effect reported in the medical and toxicological literature and include margins of safety. The margin of safety addresses uncertainties associated with inconclusive scientific and technical information available at the time of standard setting and is meant to provide a reasonable degree of protection against hazards that research has not yet identified. The margin of safety is designed to prevent pollution levels that have been demonstrated to be harmful, as well as to prevent lower pollutant levels that may pose an unacceptable risk of harm, even if the risk is not precisely identified as to nature or degree. Health protection is achieved if the estimated worst-case exposure is below the relevant reference exposure level. In such a case, an adequate margin of safety exists between the predicted exposure and the estimated threshold dose for toxicity.

Exposure to multiple toxic substances may result in health effects that are equal to, less than, or greater than effects resulting from exposure to the individual chemicals. Only a small fraction of the thousands of potential combinations of chemicals have been tested for the health effects of combined exposures. In conformity with the California Air Pollution Control Officers Association (CAPCOA) guidelines, the health risk assessment assumes that the effects of each substance are additive for a given organ system (OEHHA 2003, pp. 1-5, 8-12). Other possible mechanisms due to multiple exposures include those cases where the actions may be synergistic or antagonistic (where the effects are greater or less than the sum, respectively). For these types of substances, the health risk assessment could underestimate or overestimate the risks.

For carcinogenic substances, the health assessment considers the risk of developing cancer and assumes that continuous exposure to the cancer-causing substance occurs over a 70-year lifetime. The risk that is calculated is not meant to project the actual expected incidence of cancer, but rather a theoretical upper-bound number based on worst-case assumptions.

Cancer risk is expressed in chances per million and is a function of the maximum expected pollutant concentration, the probability that a particular pollutant will cause

cancer (called *potency factors* and established by OEHHA), and the length of the exposure period. Cancer risks for each carcinogen are added to yield total cancer risk. The conservative nature of the screening assumptions used means that actual cancer risks due to project emissions are likely to be considerably lower than those estimated.

The screening analysis is performed to assess worst-case risks to public health associated with the proposed project. If the screening analysis predicts no significant risks, then no further analysis is required. However, if risks are above the significance level, then further analysis, using more realistic site-specific assumptions, would be performed to obtain a more accurate assessment of potential public health risks.

Significance Criteria

Energy Commission staff determines the health effects of exposure to toxic emissions based on impacts to the maximum exposed individual. This is a person hypothetically exposed to project emissions at a location where the highest ambient impacts were calculated using worst-case assumptions, as described above.

As described earlier, noncriteria pollutants are evaluated for short-term (acute) and long-term (chronic) noncancer health effects, as well as cancer (long-term) health effects. The significance of project health impacts is determined separately for each of the three categories.

Acute and Chronic Noncancer Health Effects

Staff assesses the significance of noncancer health effects by calculating a *hazard index*. A hazard index is a ratio comparing exposure from facility emissions to the reference (safe) exposure level. A ratio of less than 1.0 signifies that the worst-case exposure is below the safe level. The hazard index for every toxic substance that has the same type of health effect is added to yield a Total Hazard Index. The Total Hazard Index is calculated separately for acute and chronic effects. A Total Hazard Index of less than 1.0 indicates that cumulative worst-case exposures are less than the reference exposure levels. Under these conditions, health protection from the project is likely to be achieved, even for sensitive members of the population. In such a case, staff presumes that there would be no significant noncancer project-related public health impacts.

Cancer Risk

Staff relied upon regulations implementing the provisions of Proposition 65, the Safe Drinking Water and Toxic Enforcement Act of 1986, (Health & Safety Code, §§25249.5 et seq.) for guidance to determine a cancer risk significance level. Title 22, California Code of Regulations section 12703(b) states that “the risk level which represents no significant risk shall be one which is calculated to result in one excess case of cancer in an exposed population of 100,000, assuming lifetime exposure.” This level of risk is equivalent to a cancer risk of 10 in 1 million, which is also written as 10×10^{-6}. An important distinction is that the Proposition 65 significance level applies separately to each cancer-causing substance, whereas staff determines significance based on the total risk from all cancer-causing chemicals. Thus, the manner in which the significance level is applied by staff is more conservative (health-protective) than that applied by Proposition 65. The significant risk level of 10 in 1 million is consistent with the level of

significance adopted by many air districts. In general, these air districts would not approve a project with a cancer risk exceeding 10 in 1 million. The SDCAPCDD also uses 10 in 1 million as the level of "Significant Health Risk" (OGE 2008a, Section 6.16.4.5).

As noted earlier, the initial risk analysis for a project is typically performed at a screening level, which is designed to overstate actual risks, so that health protection can be ensured. Staff's analysis also addresses potential impacts on all members of the population including the young, the elderly, people with existing medical conditions that may make them more sensitive to the adverse effects of toxic air contaminants, and any minority or low-income populations that are likely to be disproportionately affected by impacts. To accomplish this goal, staff uses the most current acceptable public health exposure levels (both acute and chronic) set to protect the public from the effects of airborne toxics. When a screening analysis shows cancer risks to be above the significance level, refined assumptions would likely result in a lower, more realistic risk estimate. Based on refined assumptions, if risk posed by the facility exceeds the significance level of 10 in 1 million, staff would require appropriate measures to reduce the risk to less than significant. If, after all risk reduction measures had been considered, a refined analysis identifies a cancer risk greater than 10 in 1 million, staff would deem such risk to be significant and would not recommend project approval.

DIRECT/INDIRECT IMPACTS AND MITIGATION

CONSTRUCTION IMPACTS AND MITIGATION

Potential risks to public health during construction may be associated with exposure to toxic substances in contaminated soil disturbed during site preparation, as well as diesel exhaust from heavy equipment operation. Criteria pollutant impacts from the operation of heavy equipment and particulate matter from earth moving are examined in staff's **AIR QUALITY** analysis.

Site disturbances occur during facility construction from excavation, grading, and earth moving. Such activities have the potential to adversely affect public health through various mechanisms, such as the creation of airborne dust, material being carried off site through soil erosion, and uncovering buried hazardous substances. The Phase I Environmental Site Assessment conducted for this site in 2008 identified no "Recognized Environmental Conditions" per the American Society for Testing and Materials Standards (ASTM) definition. That is, there was no evidence or record of any use, spillage or disposal of hazardous substances on the site, nor any other environmental concern that would require remedial action (OGE 2008a, Section 6.14.1.2 and Appendix 6.14-A). In the event that any unexpected contamination is encountered during construction of the OGP, proposed Conditions of Certification **WASTE-1** and **WASTE-2** require a registered professional engineer or geologist to be available during soil excavation and grading to ensure proper handling and disposal of contaminated soil. See the staff assessment section on **WASTE MANAGEMENT** for a more detailed analysis of this topic.

The operation of construction equipment will result in air emissions from diesel-fueled engines. Diesel emissions are generated from sources such as trucks, graders, cranes,

welding machines, electric generators, air compressors, and water pumps. Although diesel exhaust contains criteria pollutants such as nitrogen oxides, carbon monoxide, and sulfur oxides, it also includes a complex mixture of thousands of gases and fine particles. These particles are primarily composed of aggregates of spherical carbon particles coated with organic and inorganic substances. Diesel exhaust contains over 40 substances that are listed by the U.S. Environmental Protection Agency (U.S. EPA) as hazardous air pollutants and by the California Air Resources Board (ARB) as toxic air contaminants.

Exposure to diesel exhaust may cause both short- and long-term adverse health effects. Short-term effects can include increased coughing, labored breathing, chest tightness, wheezing, and eye and nasal irritation. Long-term effects can include increased coughing, chronic bronchitis, reductions in lung function, and inflammation of the lung. Epidemiological studies also strongly suggest a causal relationship between occupational diesel exhaust exposure and lung cancer.

Based on a number of health effects studies, the Scientific Review Panel on Toxic Air Contaminants recommended a chronic reference exposure level (see discussion of reference exposure levels in Method of Analysis section above) for diesel exhaust particulate matter of 5 micrograms of diesel particulate matter per cubic meter of air ($\mu g/m^3$) and a cancer unit risk factor of $3x10^{-4}$ $(\mu g/m^3)^{-1}$ (SRP 1998, p. 6).[1] The Scientific Review Panel did not recommend a value for an acute Reference Exposure Level since available data in support of a value was deemed insufficient. On August 27, 1998, ARB listed particulate emissions from diesel-fueled engines as a toxic air contaminant and approved the panel's recommendations regarding health effect levels.

Appendix 6.2-C and Tables 6.2-5 through 6.2-7 of the AFC (OGE 2008a) present estimates of the maximum daily emissions for onsite construction activities, total off-site emissions for construction of the gas pipeline, and total emissions from construction traffic. Modeling the daily emissions of construction activities using a 12-hour work day resulted in annual PM10 concentrations of 0.311 µg/m3 and annual PM2.5 concentrations of 0.0881 µg/m3 (OGE 2008a, Section 6.2.4.2). Construction of the entire project including linear facilities is anticipated to take place over a period of six months, while heavy construction activities that contribute to HAP emissions would last only three months (OGE 2008a, Section 6.16.5.1). As noted earlier, assessment of chronic (long-term) health effects assumes continuous exposure to toxic substances over a significantly longer time period, typically from 8 to 70 years. Due to the short duration of construction for this project, health risks from construction emissions are not expected.

Mitigation measures are proposed by Energy Commission staff to reduce the maximum calculated PM10 emissions. These include the use of extensive fugitive dust control measures. The fugitive dust control measures are assumed to result in 90% reductions of emissions. In order to further mitigate potential impacts from particulate emissions during the operation of diesel-powered construction equipment, Energy Commission staff recommends the use of ultra-low sulfur diesel fuel and Tier 2 or Tier 1 California Emission Standards for Off-Road Compression-Ignition Engines or the installation of an

oxidation catalyst and soot filters on diesel equipment. The catalyzed diesel particulate filters are passive, self-regenerating filters that reduce particulate matter, carbon monoxide, and hydrocarbon emissions through catalytic oxidation and filtration. The degree of particulate matter reduction is comparable for both mitigation measures in the range of approximately 85–92%. Such filters will reduce diesel emissions during construction and reduce any potential for significant health impacts.

OPERATION IMPACTS AND MITIGATION

Emissions Sources

The emissions sources at the proposed OGP include two combustion turbine generators, one black start engine and one diesel-fueled emergency firewater pump. As noted earlier, the first step in a health risk assessment is to identify potentially toxic compounds that may be emitted from the facility.

Tables 6.16-2 through 6.16-4 (OGE 2008a) list toxic air contaminants expected to be emitted from all project sources as combustion byproducts along with their anticipated amounts (emission factors). Toxic Air Contaminant emission factors were obtained from the Environmental Protection Agency (EPA) AP-42 database of emission factors. Table 6.16-1 of the AFC lists toxicity values used to characterize cancer and noncancer health impacts from project pollutants. The toxicity values include Reference Exposure Levels, which are used to calculate short-term and long-term noncancer health effects, and cancer unit risks, which are used to calculate the lifetime risk of developing cancer, as published in the OEHHA Guidelines (OEHHA 2003). **Public Health Table 2** lists the toxic emissions potentially emitted by the OGP and shows how each contributes to the health risk analysis.

Emissions Levels

Once potential emissions are identified, the next step is to quantify them by conducting a “worst case” analysis. Maximum hourly emissions are required to calculate acute (one-hour) noncancer health effects, while estimates of maximum emissions on an annual basis are required to calculate cancer and chronic (long-term) noncancer health effects.

The next step in the health risk assessment process is to estimate the ambient concentrations of toxic substances. This is accomplished by using a screening air dispersion model and assuming conditions that result in maximum impacts. The applicant’s screening analysis was performed using the ARB/OEHHA Hotspots Analysis and Reporting Program (HARP). Ambient concentrations were used in conjunction with Reference Exposure Levels and cancer unit risk factors to estimate health effects that might occur from exposure to facility emissions. Exposure pathways, or ways in which people might come into contact with toxic substances, include inhalation, dermal (through the skin) absorption, soil ingestion, consumption of locally grown plant foods, and mother’s milk.

The above method of assessing health effects is consistent with OEHHA’s Air Toxics Hot Spots Program Risk Assessment Guidelines (OEHHA, 2003) referred to earlier and results in the following health risk estimates.

Public Health Table 2
Types of Health Impacts and Exposure Routes Attributed to Toxic Emissions

Substance	Oral Cancer	Oral Noncancer	Inhalation Cancer	Noncancer (Chronic)	Noncancer (Acute)
Acetaldehyde			✔	✔	
Acrolein				✔	✔
Ammonia				✔	✔
Benzene			✔	✔	✔
Benzo(a)anthracene			✔		
Benzo(a)pyrene			✔		
Benzo(b)fluoranthene			✔		
Benzo(k)fluoranthene			✔		
1,3-Butadiene			✔	✔	
Chrysene			✔		
Dibenz(a,h)anthracene			✔		
Diesel Exhaust (PM10)			✔	✔	
Ethylbenzene			✔	✔	
Formaldehyde			✔	✔	✔
Hexane				✔	
Indenol(1,2,3-cd)anthracene			✔		
Napthalene		✔	✔	✔	
Propylene				✔	
Propylene oxide			✔	✔	✔
Toluene				✔	✔
Xylene				✔	✔

Source: OEHHA 2003, Appendix L and OGE 2008a, Table 6.16-1

Impacts

The applicant's screening health risk assessment for the project including emissions from all sources resulted in a maximum acute Hazard Index (HI) of 1.54 and a maximum chronic HI of 0.0413. The maximum acute and chronic HI occurred at locations just beyond the north boundary and near the center western boundary of the project, respectively (OGE 2008a, Section 6.16.6.2). The highest acute and chronic hazard indices at a residential location were calculated to be 0.538 and 0.00204, respectively, both occurring at residences northeast of the facility. As **Public Health Table 3** shows, the chronic HI at the point of maximum impact is less than 1.0 while the acute HI is more than 1.0, indicating that no long-term adverse health effects are expected but short-term health effects may be significant. However, the maximal hazard indices at any residential or public receptor are below the level of significance.

As shown in **Public Health Table 3**, total worst-case individual cancer risk was calculated by the applicant to be 3.65 in 1 million at the location of maximum impact, which is outside the western property line at an elevation of about 995 feet. The highest

cancer risk at a residence was calculated to be 0.178 in a million for a residence on a hill northeast of the project (OGE 2008a, Section 6.16.6.1).

Public Health Table 3
Operation Hazard/Risk at Point of Maximum Impact: Applicant Assessment

Type of Hazard/Risk	Hazard Index/Risk	Significance Level	Significant?
Acute Noncancer	1.54	1.0	Yes
Chronic Noncancer	0.0413	1.0	No
Individual Cancer	3.65 in a million	10.0 in a million	No

Source: OGE 2008a, Tables 6.16-5 and 6.16-6.

Staff conducted an independent quantitative health risk assessment and compared the results to those presented by the applicant. Emitting units assessed include two natural gas-fired combustion turbines, a natural gas-fired black start engine, and a diesel fire water pump, for a total of four emitting sources evaluated.

Staff's health risk assessment of power plant operations included the following:

- Stack parameters, building parameters, emission rates and locations of sources were obtained from the AFC and modeling files provided by the applicant.
- Emissions from the two combustion turbine generator stacks, the black start engine and the diesel fire water pump were included in the analysis.
- Use of a receptor grid of -1200 to 1200 m east and -1200 to 1200 m north, at 100 m increments.
- Exposure pathways assessed include inhalation, dermal absorption, soil ingestion, locally grown produce and mother's milk.

Atmospheric dispersion modeling was conducted using the CARB/OEHHA Hotspots Analysis and Reporting Program (HARP), Version 1.4a, which includes air dispersion modeling using EPA's ISCST model. Screening meteorological data were used to predict project risks and hazards because the local metrological data was not presented to staff in a usable format. Also, due to the severe terrain of the project area, and the tendency of the ISCST air dispersion model to over-predict ground level concentrations in such situations of severe terrain, cancer risk and chronic hazard index were calculated based on the annual average modeling results predicted by AERMOD at the maximum impact location for NOx, SOx and PM (provided by Will Walters of Aspen Engineering, e-mail correspondence September 29, 2008). The maximum Chi/Q value predicted is 0.86 (ug/m^3)/(g/sec), at a location about one-half mile west southwest from the project, at an elevation approximately 450 feet above the project site.

The emission factors used in staff's analysis of cancer risk and hazard were obtained from the AFC and are listed in **Public Health Table 4**. For cancer risk calculations using the HARP model, Staff used the "Derived(Adjusted)Method" and for chronic noncancer hazard Staff used the "Derived(OEHHA)Method". The following receptor locations were quantitatively evaluated in staff's analysis:

- The point of maximum impact (PMI) located west of the site (70 year residential scenario)
- The Maximally Exposed Individual Resident (MEIR) located northeast of the site (70 year residential scenario)

Ground level concentrations (GLCs) predicted at the maximum impact location using AERMOD results are listed in **Public Health Table 5.** Annual facility emissions in units of pounds/year are converted to units of g/sec/facility for this analysis. GLCs at the PMI were determined by multiplying the g/sec emission factor (the sum of emissions from all three sources) for each substance by the Chi/Q value. GLCs were then entered into the HARP program according to the protocol outlined in Topic 8 of the HARP How-to Guide ("*How to Perform Health Analyses Using a Ground Level Concentration*").

Results of staff's analysis using screening and local meteorology, as well as the Chi/Q approach, are summarized in Public Health Table 6 and are compared to the results presented in the AFC.

Public Health Table 4
Emission Rates Used in the Cancer Risk and Hazard Analyses

Substance	Annual Average Emissions (lbs/year)	Maximum 1-Hour Emissions (lbs/hour)
EMISSION RATES FROM OPERATION OF EACH COMBUSTION TURBINE		
Ammonia	9.64E+03	3.01E+00
1,3-Butadiene	6.50E-01	2.03E-04
Acetaldehyde	6.05E+01	1.89E-02
Acrolein	9.67E+00	3.02E-03
Benzene	1.81E+01	5.67E-03
Ethylbenzene	4.84E+01	1.51E-02
Formaldehyde	1.07E+03	3.35E-01
Propylene Oxide	4.38E+01	1.37E-02
Toluene	1.96E+02	6.14E-02
Xylenes	9.67E+01	3.02E-02
Benzo(a)anthracene	1.98E-01	6.19E-05
Benzo(a)pyrene	1.35E-01	4.23E-05
Benzo(b)fluoranthene	9.92E-02	3.10E-05
Benzo(k)fluoranthene	9.92E-02	3.10E-05
Chrysene	2.21E-01	6.90E-05
Dibenz(a,h)anthracene	1.98E-01	6.19E-05
I(1,2,3-cd)pyrene	1.98E-01	6.19E-05
Naphthalene	1.16E+01	3.64E-03
EMISSION RATES FROM OPERATION OF BLACK START ENGINE		
1,3-Butadiene	3.40E-03	2.43E-04
Acetaldehyde	1.06E-01	7.60E-03
Acrolein	6.54E-02	4.67E-03
Benzene	5.60E-03	4.00E-04
Ethylbenzene	5.05E-04	3.61E-05
Formaldehyde	6.72E-01	4.80E-02
Methanol	3.18E-02	2.27E-03
n-Hexane	1.41E-02	1.01E-03
Phenol	3.05E-04	2.18E-05
Toluene	5.19E-03	3.71E-04
Xylenes	2.34E-03	1.67E-04
Benzo(a)anthracene	1.23E-06	8.80E-08
Benzo(a)pyrene	4.82E-08	3.44E-09
Benzo(b)fluoranthene	9.91E-07	7.08E-08
Benzo(k)fluoranthene	1.50E-07	1.07E-08
Chrysene	2.80E-07	2.00E-08
Dibenz(a,h)anthracene	4.82E-08	3.44E-09
I(1,2,3-cd)pyrene	1.35E-07	9.67E-09
Naphthalene	3.85E-04	2.75E-05

Public Health Table 4 (continued)
Emission Rates Used in the Cancer Risk and Hazard Analyses

Substance	Annual Average Emissions (lbs/year)	Maximum 1-Hour Emissions (lbs/hour)
EMISSION RATES FROM OPERATION OF DIESEL FIRE WATER PUMP		
Benzene	5.98E-02	1.15E-03
Toluene	2.62E-02	5.04E-04
Xylenes	1.83E-02	3.51E-04
Propylene	1.65E-01	3.18E-03
1,3-Butadiene	2.51E-03	4.82E-05
Formaldehyde	7.56E-02	1.45E-03
Acetaldehyde	4.92E-02	9.45E-04
Acrolein	5.93E-03	1.14E-04
Benzo(a)anthracene	1.08E-04	2.07E-06
Benzo(a)pyrene	1.21E-05	2.32E-07
Benzo(b)fluoranthene	6.35E-06	1.22E-07
Benzo(k)fluoranthene	9.93E-06	1.91E-07
Chrysene	2.26E-05	4.35E-07
Dibenz(a,h)anthracene	3.74E-05	7.19E-07
Indeno(1,2,3-cd)pyrene	2.40E-05	4.62E-07
Naphthalene	5.44E-03	1.05E-04

Public Health Table 5
Ground Level Concentrations Based on AERMOD

Substance	Annual Average Emissions (lbs/year)			Annual Average Emissions (g/sec)	Ground Level Conc. (ug/m3)
	Each Turbine	Black Start Engine	Fire Water Pump	All Sources	All Sources
Ammonia	9.64E+03			1.39E-01	1.19E-01
1,3-Butadiene	6.50E-01	3.40E-03	2.51E-03	9.44E-06	8.12E-06
Acetaldehyde	6.05E+01	1.06E-01	4.92E-02	8.73E-04	7.50E-04
Acrolein	9.67E+00	6.54E-02	5.93E-03	1.40E-04	1.21E-04
Benzene	1.81E+01	5.60E-03	5.98E-02	2.62E-04	2.25E-04
Ethylbenzene	4.84E+01	5.05E-04		6.96E-04	5.99E-04
Formaldehyde	1.07E+03	6.72E-01	7.56E-02	1.55E-02	1.33E-02
n-Hexane		1.41E-02		2.03E-07	1.75E-07
Propylene Oxide	4.38E+01			6.31E-04	5.43E-04
Toluene	1.96E+02	5.19E-03	2.62E-02	2.83E-03	2.43E-03
Xylenes	9.67E+01	2.34E-03	1.83E-02	1.39E-03	1.20E-03
B(a)anthracene	1.98E-01	1.23E-06	1.08E-04	2.85E-06	2.45E-06
B(a)pyrene	1.35E-01	4.82E-08	1.21E-05	1.95E-06	1.68E-06
B(b)fluoranthene	9.92E-02	9.91E-07	6.35E-06	1.43E-06	1.23E-06
B(k)fluoranthene	9.92E-02	1.50E-07	9.93E-06	1.43E-06	1.23E-06
Chrysene	2.21E-01	2.80E-07	2.26E-05	3.18E-06	2.73E-06
Di(a,h)anthracene	1.98E-01	4.82E-08	3.74E-05	2.85E-06	2.45E-06
I(1,2,3-cd)pyrene	1.98E-01	1.35E-07	2.40E-05	2.85E-06	2.45E-06
Naphthalene	1.16E+01	3.85E-04	5.44E-03	1.68E-04	1.44E-04

Public Health Table 6
Results of Staff's Analysis and the Applicant's Analysis for Cancer Risk and Chronic and Acute Hazard Indices

	Staff's Analysis HARP with ISCST Screening Meteorological Data			Applicant's Analysis		
	Cancer Risk (per million)	Chronic HI	Acute HI	Cancer Risk (per million)	Chronic HI	Acute HI
PMI	4.3	0.049	0.6	3.7	0.041	1.5
MEIR	1.9	0.021	0.3	0.18	0.0020	0.54
	Staff's Analysis AERMOD with Local Meteorological Data					
	Cancer Risk (per million)	Chronic HI	Acute HI			
PMI	0.64	0.0072	n/a			
MEIR	n/a	n/a	n/a			

Staff cannot explain the difference in the acute Hazard Index estimated by the applicant and that found by staff using screening meteorological data. The use of screening meteorology data should have resulted in a higher acute hazard index, not a lower index. (The estimates for cancer risk and chronic hazard were as expected, slightly higher using screening meteorology data.) Also, the estimated cancer risk estimated by staff using ISC and screening meteorology data is about the same as the applicant's estimate and the AERMOD air dispersion model which is generally more accurate for complex terrain gave a much lower cancer risk estimate than the use of the ISC/HARP model used by staff or the ISC/HARP model used by the applicant. However, because the cancer risk estimates are all very much less than the level of significant risk (10 in one million), staff believes that regardless of the source of the differences, the project will not cause a significant risk of cancer to the public. And, since staff's assessment using screening meteorology data found both the chronic and acute hazard indices to be less than significant (< 1.0), staff believes that the project will likewise not cause a significant acute or chronic hazard to the public.

Potential Health Impacts due to Truck Transport of Process Water

The OGP proposes to transport process water (both reclaimed and fresh) by tanker truck to the site, which would require a maximum of one round trip per hour for each of two trucks, one transporting reclaimed water and the other fresh water. Staff has requested that the applicant provide a health risk assessment for the impacts of diesel emissions on the public along the water transportation routes. The applicant modeling (provided in Exhibits 52-1 and 52-2 of Data Response 52, TRC2008f) resulted in a

maximum cancer risk at a residential receptor of 3.91 in one million from diesel exhaust emissions along the road, 2.26 in one million for idling at the fresh water pickup location, and 1.71 in one million for idling at the reclaimed water pickup location. The maximum chronic HI at a residential receptor was calculated to be 0.00246 along the road, 0.00142 at the fresh water pickup station, and 0.00107 at the reclaimed water pickup station. The acute HI at all locations was found to be zero (TRC2008f, Exhibit 52-1).

Staff also analyzed cancer risks and chronic hazards due to emissions from diesel-fueled trucks hauling water to the proposed OGP site. The applicant plans to obtain reclaimed and fresh water from off-site pickup stations. The reclaimed water station is located west of the proposed site, with a one-way distance of 15.6 miles. The fresh water pickup station is located northwest of the site, with a one-way distance of 9.0 miles. Based on expected use of the proposed plant, water hauling is expected to typically occur about 60 days/year, however staff used the maximum hours possible 3200 hrs/year in its estimate of impacts. The peak expected rate of water hauling is one truck per hour for fresh water and one truck per hour for reclaimed water (OGE 2008a, AFC Section 6.11.1.3).

Atmospheric dispersion modeling was conducted using the CARB/OEHHA Hotspots Analysis and Reporting Program (HARP), Version 1.4a. Road and emission input parameters used in the HARP model were obtained from the modeling files provided by the applicant in Data Response 52. The analysis of risks due to diesel emissions from water haul trucks included the following protocol developed by the applicant to estimate hourly and yearly diesel emissions:

- A one mile segment of roadway was segregated into 22 adjacent rectangular road segments, each treated as an area source in the dispersion modeling. The one mile segment is located on Mission Road, on the fresh water haul route.
- PM_{10} emission factor assumed to be 0.002 lb/vehicle mile traveled (applicant reported this value obtained from SCAQMD).
- 0.002 lb Diesel Exhaust PM emitted over a one mile segment of roadway during one trip per hour which is equivalent to 0.002 lb/hr over one mile or 0.00009 lb/hr over each of the 22 road segments. This is equivalent to: 1 round-trip/hr x 0.002 lb/mi x 1 mile/22 segments = 0.00009 lb/hr
- Maximum operating annual hours are 3,200 hours/year which at a rate of 0.002 lb/mi emissions during one round-trip per hour, would result in an emission rate of 6.4 lb/year over 1 mile or 0.29 lb/yr over each of the 22 road segments. This is equivalent to 0.00009 lb/hr x 3,200 hr/yr = 0.29 lb/yr
- Local meteorological data and demographic files were provided by the applicant.
- Receptors were located along both sides of the one mile road segment. 136 receptors were evaluated.

Cancer risk was determined under the Derived (Adjusted) risk assessment methods and chronic hazard under the Derived (OEHHA) method. The maximum cancer risk determined by the applicant was 3.9E-06 and the maximum chronic hazard index was 0.0025.

Staff was able to recreate the applicant's HARP analysis and obtained the same risk and hazard index results (see **Public Health Table 7**). In order to verify that the analysis identified the maximally impacted receptor, Staff conducted an additional HARP analysis using a receptor grid of -500 to 500 m east and -500 to 500 m north, at 50 m increments. The grid was centered around the road segment located closest to the receptor with maximum risk identified in the applicant's analysis. Staff's analysis resulted in a maximum cancer risk of 6.0E-06 and maximum chronic hazard index of 0.0038, located at a receptor next to the roadway.

The risks reported in this analysis are for residents along the one mile road segment of Mission Road on the fresh water haul route but are applicable to any person along any route.

Public Health Table 7
Applicant and Staff Water Transport
Cancer and Chronic Hazard Index Results

	Maximally Impacted Receptor	
	Applicant	**Staff**
Cancer Risk	3.9E-06	6.0E-06
Chronic HI	0.0025	0.0038

These results show that both the applicant's and staff's modeling of the transport of water to the project show that health impacts would be less than significant. Note that during drought conditions, the project may use more reclaimed water if fresh water is not available; however the project would require the same number of water transport truck trips. The cancer and Chronic HI could change during a drought if the truck trips along the reclaimed water route were to increase above the level used in staff's assessment (which was based on 3200 hours of operation per year or 133 days of one round-trip delivery each hour).

Cooling Tower

In addition to project TAC emission, bacterial growth in the proposed three cell packaged cooling tower, including Legionella, could present a public health risk. Legionella is a bacterium that is ubiquitous in natural aquatic environments and is also widely distributed in man-made water systems. It is the principal cause of legionellosis, otherwise known as Legionnaires' Disease, which is similar to pneumonia. Transmission to people results mainly from inhalation or aspiration of aerosolized contaminated water. Untreated or inadequately treated cooling systems, such as industrial cooling towers and building heating, ventilating, and air conditioning systems, have been correlated with outbreaks of legionellosis.

Legionella can grow symbiotically with other bacteria and can infect protozoan hosts. This provides Legionella with protection from adverse environmental conditions, including making it more resistant to water treatment with chlorine, biocides, and other disinfectants. Thus, if not properly maintained, cooling water systems and their components can amplify and disseminate aerosols containing Legionella.

As noted in the LORS section above, the State of California regulates recycled water for use in cooling towers in Title 22, Section 60303, California Code of Regulations. This section requires that, in order to protect workers and the public who may come into contact with cooling tower mists, chlorine or another biocide must be used to treat the cooling system water to minimize the growth of Legionella and other micro-organisms. This regulation applies to the OGP since it intends to use tertiary-treated recycled water provided by the Fallbrook Public Utility District (FPUD) Wastewater Treatment Plant No. 1 for cooling (OGE 2008a, Section 2.6.2.1).

The U.S. EPA published an extensive review of Legionella in a human health criteria document (EPA 1999). The U.S. EPA noted that Legionella may propagate in biofilms (collections of microorganisms surrounded by slime they secrete, attached to either inert or living surfaces) and that aerosol-generating systems such as cooling towers can aid in the transmission of Legionella from water to air. The U.S. EPA has inadequate quantitative data on the infectivity of Legionella in humans to prepare a dose-response evaluation. Therefore, sufficient information is not available to support a quantitative characterization of the threshold infective dose of Legionella. Thus, the presence of even small numbers of Legionella bacteria presents a risk - however small - of disease in humans.

In February of 2000 the Cooling Technology Institute (CTI) issued its own report and guidelines for the best practices for control of Legionella (CTI 2000). The CTI found that 40-60% of industrial cooling towers tested were found to contain Legionella. More recently, staff has received a 2005 report of testing in cooling towers in Australia that found the rate of Legionella presence in cooling tower waters to be extremely low, approximately 3-6%. The cooling towers all had implemented aggressive water treatment and biocide application programs similar to that required by proposed condition of certification **PUBLIC HEALTH-1**.

To minimize the risk from Legionella, the CTI noted that consensus recommendations included minimization of water stagnation, minimization of process leads into the cooling system that provide nutrients for bacteria, maintenance of overall system cleanliness, the application of scale and corrosion inhibitors as appropriate, the use of high-efficiency mist eliminators on cooling towers, and the overall general control of microbiological populations.

Good preventive maintenance is very important in the efficient operation of cooling towers and other evaporative equipment (ASHRAE 1998). Preventive maintenance includes having effective drift eliminators, periodically cleaning the system if appropriate, maintaining mechanical components in working order, and maintaining an effective water treatment program with appropriate biocide concentrations. Staff notes that most water treatment programs are designed to minimize scale, corrosion, and biofouling and not to control Legionella.

The efficacy of any biocide in ensuring that bacterial and in particular Legionella growth, is kept to a minimum is contingent upon a number of factors including but not limited to proper dosage amounts, appropriate application procedures and effective monitoring.

In order to ensure that Legionella growth is kept to a minimum, thereby protecting both nearby workers as well as members of the public, staff has proposed Condition of Certification **PUBLIC HEALTH-1**. The condition would require the project owner to prepare and implement a biocide and anti-biofilm agent monitoring program to ensure that proper levels of biocide and other agents are maintained within the cooling tower water at all times, that periodic measurements of Legionella levels are conducted, and that periodic cleaning is conducted to remove bio-film buildup. Staff believes that with the use of an aggressive antibacterial program coupled with routine monitoring and biofilm removal, the chances of Legionella growing and dispersing would be reduced to insignificance.

CUMULATIVE IMPACTS

The applicant has contacted the SDCAPCD, which identified two facilities within a 6-mile radius that submitted applications for authority to construct: a thermal oxidizer for soil remediation in Escondido and an industrial dust collector in the City of Vista. The applicant identified no other sources of emissions in the project vicinity and therefore cumulative impacts from this project are not expected (OGE 2008a, Section 6.16.7).

The maximum cancer risk for emissions from OGP (calculated by staff) is 0.64 in one million.

As described above, the contribution of the OGP to both cancer risk and chronic and acute noncancer disease are comparatively very small. Even in a cumulative context including other regional sources, the estimates for cancer risk from the OGP project are less than significant. In addition, OGP's contribution to chronic and acute noncancer disease is less than significant in a cumulative context.

COMPLIANCE WITH LORS

Staff has considered the minority population as identified in **Socioeconomics Figure 1** in its impact analysis and has found no potential significant adverse impacts for any receptors, including environmental justice populations. In arriving at this conclusion, staff notes that its analysis complies with all directives and guidelines from the Cal/EPA Office of Environmental Health Hazard Assessment and the California Air Resources Board. Staff's assessment is biased toward the protection of public health and takes into account the most sensitive individuals in the population. Using extremely conservative (health-protective) exposure and toxicity assumptions, staff's analysis demonstrates that members of the public potentially exposed to toxic air contaminant emissions of this project—including sensitive receptors such as the elderly, infants, and people with pre-existing medical conditions—will not experience any acute or chronic significant health risk or any significant cancer risk as a result of that exposure. Staff believes that it incorporated every conservative assumption called for by state and federal agencies responsible for establishing methods for analyzing public health impacts. The results of that analysis indicate that there would be no direct or cumulative significant public health impact to any population in the area. Therefore, given the absence of any significant health impacts, there are no disparate health impacts and there are no environmental justice issues associated with **PUBLIC HEALTH**.

Staff concludes that construction and operation of the OGP will be in compliance with all applicable LORS regarding long-term and short-term project impacts in the area of **PUBLIC HEALTH**.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

No comments were received.

CONCLUSIONS

Staff has analyzed potential public health risks associated with construction and operation of the OGP and does not expect any significant adverse cancer, short-term, or long-term health effects to any members of the public, including low income and minority populations, from project toxic emissions. Staff also concludes that its analysis of potential health impacts from the proposed OGP uses a highly conservative methodology that accounts for impacts to the most sensitive individuals in a given population, including newborns and infants. According to the results of staff's health risk assessment, emissions from the OGP would not contribute significantly or cumulatively to morbidity or mortality in any age or ethnic group residing in the project area.

PROPOSED CONDITIONS OF CERTIFICATION

PUBLIC HEALTH-1 The project owner shall develop and implement a Cooling Water Management Plan to ensure that the potential for bacterial growth in cooling water is kept to a minimum. The Plan shall be consistent with either staff's "Cooling Water Management Program Guidelines" or with the Cooling Technology Institute's "Best Practices for Control of Legionella" guidelines but in either case, the Plan must include sampling and testing for the presence of Legionella bacteria at least every six months. After two years of power plant operations, the project owner may ask the CPM to re-evaluate and revise the Legionella bacteria testing requirement.

Verification: At least 60 days prior to the commencement of cooling tower operations, the Cooling Water Management Plan shall be provided to the CPM for review and approval.

REFERENCES

American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) 1998. Legionellosis: Position Paper. June 25.

BAAQMD (Bay Area Air Quality Management District). 2004b. Toxic Air Contaminant Control Program Annual Report 2002. Volume I. June.

California Air Resources Board. 2002. California Air Quality Data, <http://www.arb.ca.gov/aqd/aqd.htm>.

CAPCOA (California Air Pollution Control Officers Association).1993. CAPCOA Air Toxics "Hot Spots" Program Revised 1992 Risk Assessment Guidelines. Prepared by the Toxics Committee. October.

Cooling Technology Institute (CTI). 2000. Guidelines: Best Practices for Control of Legionella.

OGE2008a – OGE/S. Thome (tn46770) Application for Certification Orange Grove Energy dated 6/19/08. Submitted to Dockets 6/19/08

Environmental Protection Agency (EPA) November 1999. (EPA-822-R-99-001) "Legionella: Human Health Criteria Document."

OEHHA (Office of Environmental Health Hazard Assessment). 2003. *Air Toxics Hot Spots Program Risk Assessment Guidelines*. The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments. August.

SRP (Scientific Review Panel on Toxic Air Contaminants). 1998. Findings of the Scientific Review Panel on The Report on Diesel Exhaust as adopted at the Panel's April 22, 1998, meeting.

TRC2008f – J. Stenger (tn47854) Data Responses 1-73 dated 8/29/08. Submitted to Dockets 8/29/08

SOCIOECONOMICS

Testimony of Amanda Stennick

SUMMARY OF CONCLUSIONS

Staff concludes that construction and operation of the Orange Grove Energy Project would not cause significant direct or cumulative adverse socioeconomic impacts on the study area's housing, schools, law enforcement, and parks. Staff concludes that with Condition of Certification **WORKER SAFETY-6**, the project would not cause significant direct or cumulative adverse impacts to emergency services. Staff also concludes that the OGE would not induce substantial growth or concentration of population; induce substantial increases in demand for housing or public services; or displace a large number of people.

INTRODUCTION

This staff socioeconomics impact analysis evaluates the project's induced changes on community services and/or infrastructure, and related community issues such as environmental justice. Staff discusses the estimated impacts of the construction and operation of the Orange Grove Energy (OGE) Application for Certification (AFC) on local communities, community resources, and public services.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Socioeconomics Table 1

California Education Code, Section 17620	The governing board of any school district is authorized to levy a fee, charge, dedication, or other requirement for the purpose of funding the construction or reconstruction of school facilities.
California Government Code, Sections 65996-65997	Except for a fee, charge, dedication, or other requirement authorized under Section 17620 of the Education Code, state and local public agencies may not impose fees, charges, or other financial requirements to offset the cost for school facilities.

SETTING

The project site is located in unincorporated northwestern San Diego County about one mile west of the Pala Indian Reservation and two miles west of the unincorporated community of Pala; the town of Fallbrook is about 12 miles to the west. This area of San Diego County is primarily rural, with some agriculture and small communities. Large-scale commercial and industrial uses such as hotel/casino and mining operations are

also present. Riverside County borders San Diego County on the north and is about five miles from the project site. State Route 76 to the south (also known as Pala Road) provides east-west access to the site, and County Road S16 (also known as Pala-Temecula Road) runs north-south. Pala businesses include convenience stores, banks, and grocery shopping. The Pala Casino Spa Resort, a 507-room hotel, spa, and casino, is located about 0.50 miles southwest of the intersection of Pala Road and Pala-Temecula Road.

DEMOGRAPHIC SCREENING

Staff's demographic screening is designed to determine the existence of a minority or below-poverty-level population or both within a six-mile area of the proposed project site. The demographic screening process is based on information contained in two documents: *Environmental Justice: Guidance Under the National Environmental Policy Act* (Council on Environmental Quality, 1997) and *Final Guidance for Incorporating Environmental Justice Concerns in EPA's in NEPA's Compliance Analyses National* (Council on Environmental Quality, 1998). The screening process relies on Year 2000 U.S. Census data to determine levels of minority and below-poverty-level populations.

Minority Populations

According to *Environmental Justice: Guidance Under the National Environmental Policy Act*, minority individuals are defined as members of the following groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. A minority population is identified when the minority population of the potentially affected area is (1) greater than 50%; (2) meaningfully greater than the percentage of the minority population in the general population or other appropriate unit of geographical analysis; or (3) when one or more U.S. Census blocks in the potentially affected area have a minority population of greater than 50%.

For the OGE project, the total population within the six-mile radius of the proposed site is 13,125 persons and the total minority population is 4,116 persons or about 31% of the total population (see **Socioeconomics Figure 1**). However, there are census blocks with minority populations greater than 50%. Therefore, staff in several technical areas identified in the Executive Summary has considered environmental justice in their environmental impact analyses.

Below-Poverty-Level Populations

Staff has also identified the current below-poverty-level population based on Year 2000 U.S. Census block group data within a six-mile radius of the project site. The below-poverty-level population within a six-mile radius of the OGE Project consists of 1,720 people or about 13% of the total population in that area.

ASSESSMENT OF IMPACTS

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

The criteria used to determine whether project-related socioeconomic impacts would be significant are presented in Appendix G of the California Environmental Quality Act (CEQA) Guidelines. As required by the guidelines, staff determines a project's

potentially significant impact on population, housing, recreation, and emergency medical and public services by evaluating the impact of the project on those areas (**Socioeconomics Table 2**).

Criteria for subject areas such as utilities, fire protection, water supply, and wastewater disposal are analyzed in the **RELIABILITY**, **WORKER SAFETY AND FIRE PROTECTION**, and **SOILS AND WATER RESOURCES** sections of this document. Impacts on housing, parks and recreation, schools, medical services, law enforcement, and cumulative impacts are based on subjective judgments or input from local and state agencies. Typically, substantial long-term employment of people from regions outside the study area would have the potential to result in significant adverse socioeconomic impacts.

Socioeconomics Table 2
CEQA Environmental Checklist Form

	Potentially Significant Impact	**Less Than Significant With Mitigation**	**Less Than Significant Impact**	**No Impact**
POPULATION AND HOUSING —Would the project:				
A. Induce substantial population growth in a new area, either directly or indirectly.				X
B. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				X
C. Displace substantial numbers of people, necessitating construction of replacement housing elsewhere?				X
PUBLIC SERVICES —Would the project:				
D. Result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities, need for new of physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service rations, response times, or other performance objectives for any of the public services:				
Emergency medical services			X	
Police protection			X	
Schools				X
Parks				X
Other public facilities				X
RECREATION—Would the project:				
A. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated				X

DIRECT/INDIRECT IMPACTS AND MITIGATION

Induce Substantial Population Growth

For the purpose of this analysis, staff defines “induce substantial population growth” as workers permanently moving into the project area because of project construction and operation, thereby encouraging construction of new homes or extension of roads or other infrastructure. To determine whether the project would induce population growth, staff analyzes the availability of the local workforce and the population within the region. Staff defines “local workforce” as the San Diego-Carlsbad-San Marcos and the Riverside-San Bernardino-Ontario Metropolitan Statistical Areas (MSA). **Socioeconomics Table 2** shows the historical and projected populations within San Diego and Riverside Counties and the state.

Socioeconomics Table 2
Historical and Projected Populations

Area	2000 Population	2005 Population	2020 Population
San Diego County	2,813,833	2,824,259	2,858,150
Riverside County	1,545,387	1,911,281	3,270,200
California	33,871,648	35,278,768	39,500,200
Source: EDD 2008			

As reported by the Department of Finance (DOF) and stated in the AFC, the cities in San Diego County with over 100,000 residents include San Diego (population 1,250,700), Chula Vista (population 183,300), Oceanside (population 165,400), and Escondido (population 137,000). All four cities are within 1.5 hours commuting time of the project. The Riverside County cities of Riverside (population 265,700) and Corona (population 131,200) are also within 1.5 hours commuting time of the project. **Socioeconomics Table 3** shows that total labor by skill in the two MSAs is more than adequate to provide construction labor for the OGE project.

Socioeconomics Table 3
Total Labor by Skill in San Diego and Riverside MSAs Annual Average for 2014

Trade	San Diego MSA	Riverside/San Bernardino MSA	Total # of Workers for Project Construction by Craft
Boilermaker	170	450[1]	12
Carpenter	23,620	37,500	27
Cement Masons	2,770	6,950	16
Electricians	6,690	7,860	85
Ironworkers	1,200	960	6
Laborers	13,520	25,290	18
Millwrights	NA	150	64
Operators	4,200	5,170	14
Painters	8,980	9,410	61
Pipefitter	7,630	5,650	4
Insulator	420	240	50
Lineman	NA	NA	18

Source: EDD Labor Market Information; Occupational Employment Projections 2004-20014. 1. The "Boilermakers" category reflects the entry for all "Extractive and Related Workers," of which boilermakers are a part. These numbers overstate the actual number of boilermakers, but were the only number available, as the "Boilermaker" category itself was not broken out for the Riverside/San Bernardino MSA labor force projections data sets.

The applicant estimates that construction would begin in April 2009 and last for six months. As shown in Table 6.10-16 in the AFC, the number of construction workers would range from a minimum of 29 in the first month to a maximum of 105 in the fifth month of construction. The average number of workers onsite for the six-month period would be 70. Staff accepts the applicant's position that because of the short construction period, all construction labor would be local and few, if any construction workers would relocate to the project site. The project would have nine full-time employees; the applicant expects all nine employees would be hired locally. Given the large labor force in the cities of San Diego and Riverside Counties within 1.5 hours commuting time of the project, staff does not expect employees would relocate to the immediate project area.

Therefore, staff concludes that the construction and operation workforce would not induce substantial growth or concentration of population and the OGE would not encourage people to permanently move into the area. Consequently, the OGE would have no direct or indirect impact on substantial population growth in a new area.

Displace Existing Housing

Because of the large labor force in nearby cities of San Diego and Riverside Counties and the short construction period, staff expects the majority of construction workers will commute to the project daily from their existing residences. No new housing construction would be required.

Should any construction workers choose to relocate to the project area for the six-month construction period, the available temporary housing in northern San Diego County and

southern Riverside County would be adequate to meet the demand. San Diego County has approximately 54,000 hotel rooms and the community of Fallbrook has 11 hotels (www.fallbrookca.org).

The project would have nine full-time employees; the applicant expects all nine employees would be hired locally. Given the large labor force in the cities of San Diego and Riverside Counties within 1.5 hours commuting time of the project, staff does not expect employees would relocate to the immediate project area.

Staff concludes that the construction and operation workforce would not have a significant adverse impact on housing within the immediate project area and the regional area of Riverside and San Diego Counties, and would not displace existing housing or necessitate construction of replacement housing elsewhere.

Displace Substantial Numbers of People

The project site would be constructed on a 41-acre former citrus orchard in northwestern San Diego County, one mile west of the Pala Indian Reservation and two miles west of the unincorporated community of Pala. This area of San Diego County is primarily rural, with some agriculture and small communities. Large-scale commercial and industrial uses such as hotel/casino and mining operations are also present. The project would not displace any people.

Result in Substantial Physical Impacts to Government Facilities

As discussed under the subject headings below, the OGE would not cause significant impacts to service ratios, response times, or other performance objectives relating to emergency medical services, law enforcement, or schools. Fire protection is analyzed in the **WORKER SAFETY AND FIRE PROTECTION** section of this document.

Emergency Medical Services

On October 6, 2008, the San Diego Local Agency Formation Commission (LAFCO) authorized San Diego County to provide fire protection and emergency medical services in the area that encompasses the OGE. The proposed OGE site is not currently within the jurisdiction of a fire department; however, it is within the Sphere of Influence of the North County Fire Protection District (NCFPD). San Diego County has indicated that it will assign a fire protection district to provide services to the area or the applicant has indicated it will enter into a private service contract directly with the NCFPD. Once the county designates a service provider or a private service contract is approved, the project would be under the jurisdiction of the local fire district for code enforcement and fire protection/emergency response services. Emergency medical response would also be provided by the NCFPD or the Valley Center Fire Protection District which may have an exclusive operating area (EOA) franchise for a region that includes the OGP site (TRC2008f, Data Response #56 and Exhibit 54-1). Please refer to the **WORKER SAFETY AND FIRE PROTECTION** section of this document for a complete discussion of services and Condition of Certification **WORKER SAFETY-6** that would require the project owner to have in place either a private service contract or assignment by San Diego County to a fire district for services no later than sixty days before any activity takes place on the site.

Law Enforcement

The San Diego County Sheriff's (SDS) Department provides public safety and law enforcement services to the unincorporated areas of the County, including the site. The SDS headquarters are located at 28205 N. Lake Wohlford Road, in Valley Center, approximately 17 miles southeast of the site. As stated in the AFC and cited by the SDS, the level of service in the project area is currently inadequate due to the many casinos in the project area. For non-emergency calls, response times for the Valley Center command station have ranged in effectiveness from "medium" (20 to 60 minutes) to "low" (greater than one hour). As stated in the AFC, non-emergency calls to the site would typically be closer to the low range (greater than one hour response time).

Because the operation of power plants requires little in the way of law enforcement, staff concludes that the existing law enforcement resources would be adequate to provide services to the OGE during construction and operation.

Education

The project site is located within the boundaries of the Bonsall Union School District (BUSD), which includes three elementary schools, one middle school, one charter school, and enrolls approximately 1,908 students (data1.cde.ca.gov). Vivian Banks Charter School in Pala is the closest school to the project, and enrolls 119 students, grades kindergarten through eight. The closest high school is Fallbrook High, located within the city limits of Fallbrook, which enrolls approximately 3,106 students.

During construction, staff expects the labor force would commute daily from the region. Due to the commuting habits of construction workers and the short construction time, staff does not expect any construction workers to relocate their families to the area. Therefore, staff does not expect a significant adverse impact to the schools from construction of the proposed project.

A total of nine workers are needed to operate the OGE. As previously stated, the applicant expects to hire the operation workforce from within the area. Should all nine operation workers relocate to Fallbrook, an average family size of 2.5 persons per household would result in the addition of about eight school children to the schools within the BUSD. Given the number of possible schools within the BUSD, staff does not expect a significant adverse impact from the possible addition of eight school children.

Education Code section 17620 states that school districts are authorized to levy a fee, charge, dedication, or other requirement for the purpose of funding the construction or reconstruction of school facilities. School facilities are defined as "any school-related consideration relating to a school district's ability to accommodate enrollment." California Government Code Sections 65996-65997 state that except for a fee, charge, dedication, or other requirement authorized under Section 17620 of the Education Code, state and local public agencies may not impose fees, charges, or other financial requirements to offset the cost for school facilities. The BUSD charges owners of new commercial industrial development $0.47 per square foot for covered and enclosed

space. Based on an estimated 5,000 square feet of covered and enclosed space for the OGE, the BUSD would charge the applicant a one-time school impact fee of $2,350.00, which staff has proposed as condition of certification **SOCIO-1**.

Increase the Use of Existing Recreation Facilities

The San Diego County Parks and Recreation Department is responsible for maintaining the five community parks in the North County area. The two parks closest to the project site are the Fallbrook Community Center, located at 341 Heald Lane and the Fallbrook Community Park. The Community Center is a venue for community-based activities and education and the Community Park has restrooms, two sand volleyball courts, covered picnic pavilion, barbeques, and parking. Live Oak Park's amenities include oak groves, softball fields, a dance pavilion, playgrounds, volleyball courts, six picnic areas, and hiking trails.

Staff concludes that there are a number and variety of parks within the regional project area and does not expect the construction or operation workforce to have a significant adverse impact on parks. The applicant expects construction to last for six months and construction workers are unlikely to relocate or bring their families to the work site. The project would have nine full-time employees that the applicant expects would be hired locally. Given the large labor force in the cities of San Diego and Riverside Counties within 1.5 hours commuting time of the project staff does not expect employees would relocate to the immediate project area.

Staff does not expect the construction or operation workforce would significantly impact existing park services or necessitate construction of new parks in the area.

CUMULATIVE IMPACTS

A project may result in significant adverse cumulative impacts when its effects are cumulatively considerable; that is, when the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects [*Public Resources Code* Section 21083; *California Code of Regulations*, Title 14, Sections 15064(h); 15065 (c); 15130; and 15355]. Mitigation requires taking feasible measures to avoid or substantially reduce the impacts.

In a socioeconomic analysis, cumulative impacts could occur when more than one project in the same area has an overlapping construction schedule, thus creating a demand for workers that cannot be met locally. That increased demand for labor could result in an influx of non-local workers and their dependents, resulting in a strain on housing, schools, parks and recreation, law enforcement, and medical services.

There are about 12 energy projects (including OGE) that could potentially contribute to an overlapping construction schedule. With the exception of two projects located in San Diego County, all of these projects are located in the South Coast Air Quality Management District (SCAQMD), which is the air pollution control agency for all of Orange County and the urban portions of Los Angeles, Riverside, and San Bernardino counties. Because of the July 2008 California Supreme Court ruling that concluded the

SCAQMD failed to fully evaluate the environmental impacts of allowing new power plants to use priority reserve credits, the construction schedule of those projects in the SCAQMD (below) is uncertain.

1. El Segundo Repower (Los Angeles County).
2. Blythe II (Riverside County).
3. Walnut Creek Peaker (Los Angeles County).
4. Sun Valley Peaker (Los Angeles County).
5. Highgrove Peaker (San Bernardino County).
6. Vernon Power Plant (Los Angeles County).
7. Victorville Hybrid Gas/Solar (San Bernardino County).
8. San Gabriel (San Bernardino County).
9. Sentinel (Riverside County).

In addition to the energy projects listed above, there are numerous ongoing residential, commercial, and industrial construction projects throughout Los Angeles, San Bernardino, Riverside, and San Diego Counties and it is beyond the scope of this analysis to list them. As shown in **SOCIOECONOMICS Table 4,** the total construction labor force by MSA for the affected counties is more than sufficient to accommodate the labor needs for construction of power generation facilities and other large industrial projects. Based on the robust construction labor force and because the OGE will employ a small number of workers for a period of six months, staff does not expect the OGE to contribute to any significant adverse cumulative socioeconomic impacts.

Socioeconomics Table 4
Occupational Employment Projections by MSA

Construction and Extraction Occupations for Selected MSAs	Average Annual Employment for 2004	Average Annual Employment for 2014
San Diego MSA	96,630	107,730
Riverside MSA (includes San Bernardino County	124,080	159,320
Los Angeles MSA	160,350	173,240
TOTALS	381,060	440,290

Source: EDD 2007 Projections of Employment by Industry and Occupation

NOTEWORTHY PUBLIC BENEFITS

Noteworthy public benefits include the direct, indirect, and induced impacts of a proposed power plant. Determining and reporting those impacts is a primary task in

developing a socioeconomic analysis[1]. For purposes of this analysis, direct impacts were said to exist if the project resulted in permanent jobs and wages; indirect impacts, if jobs, wages, and sales resulted from constructing the project; induced impacts, from the spending of wages and salaries on food, housing, and other consumer goods. These benefits are shown in **Socioeconomics Table 5**.

Socioeconomics Table 5
Noteworthy Public Benefits
Related to Orange Grove Energy Project

Fiscal Benefits	
Estimated annual property taxes	$1.2 million
State and local sales taxes: Construction	
State and local sales taxes: Operation	$224,750
School Impact Fee	$2,350
Non-Fiscal Benefits	
Total capital costs	$87 million
Construction payroll	$6.5 million
Operations payroll	$1.1 million
Construction materials and supplies	local value not estimated
Operations and maintenance supplies	$2.9 million
Direct, Indirect, and Induced Benefits	
Estimated Direct Employment	
Construction	105 jobs (maximum)
Operation	9 jobs
Estimated Secondary Employment	
Construction	85 jobs
Operation	14 jobs
Estimated Secondary Income	
Construction	$3.6 million
Operation	$1.6 million

[1] The dollars spent on or resulting from the construction and operation of the OGE will have a ripple effect on the local economy. For example, OGE owners would employ workers and purchase supplies and services for the life of the project. Employees use salaries and wages to purchase goods and services from other businesses. Those businesses make their own purchases and hire employees, who also spend their salaries and wages throughout the local and regional economy. This effect of indirect (jobs, sales, and income generated) and induced (employees' spending for local goods and services) spending continues with subsequent rounds of additional spending, which is gradually diminished through savings, taxes, and expenditures made outside the area. This ripple effect is measured by an "Input-Output" economic model. The model relies on a series of multipliers to provide estimates of the number of times each dollar of input or direct spending cycles through the economy in terms of indirect and induced output, or additional spending, personal income, and employment. Several input-output models are commonly used by economists, including the IMPLAN model used by the applicant. IMPLAN multipliers indicate the ratio of direct impacts to indirect and induced impacts. Staff reviewed the results of the IMPLAN model and found them to be reasonable considering data provided by the applicant as well as data obtained by staff from governmental agencies, trade associations, and public interest research groups.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

Staff received a letter dated February 6, 2008 from the San Diego Local Agency Formation Commission (LAFCO) regarding the extension of the NCFPD service boundary, an action formerly under consideration by the applicant and NCFPD. Since then, LAFCO has assigned fire protection and emergency services to San Diego County.

CONCLUSIONS

Estimated gross public benefits from the OGE include increases in sales tax, employment, and income for the project area and region.

Staff concludes that construction and operation of the OGE would not cause significant direct or cumulative adverse socioeconomic impacts on the study area's housing, schools, law enforcement, and parks. Staff concludes that with Condition of Certification **WORKER SAFETY-6**, the project would not cause significant direct or cumulative adverse impacts to emergency services. Staff also concludes that the OGE would not induce substantial growth or concentration of population; induce substantial increases in demand for housing or public services; or displace a large number of people.

PROPOSED CONDITIONS OF CERTIFICATION

SOCIO-1 The project owner shall pay the one-time statutory school facility development fee to the Bonsall Unified School District as required by Education Code Section 17620.

Verification: At least 30 days prior to the start of project construction, the project owner shall provide to the CPM proof of payment of the statutory development fee.

REFERENCES

California Energy Commission Statewide Transmission & Power Plant Maps 2006, Census Pl 94-171 Data-Matrix PL2.

California Department of Education, Data and Statistics, Student Demographics, School Year: 2006-07. <http://www.cde.ca.gov/ds/>.

OGE2008a – OGE/S. Thome (tn46770) Application for Certification Orange Grove Energy dated 6/19/08. Submited to Dockets 6/19/08.

OGE2008c – OGE/S. Thome (tn46979) Supplement to AFC dated 7/8/08. Submitted to Dockets 7/8/08.

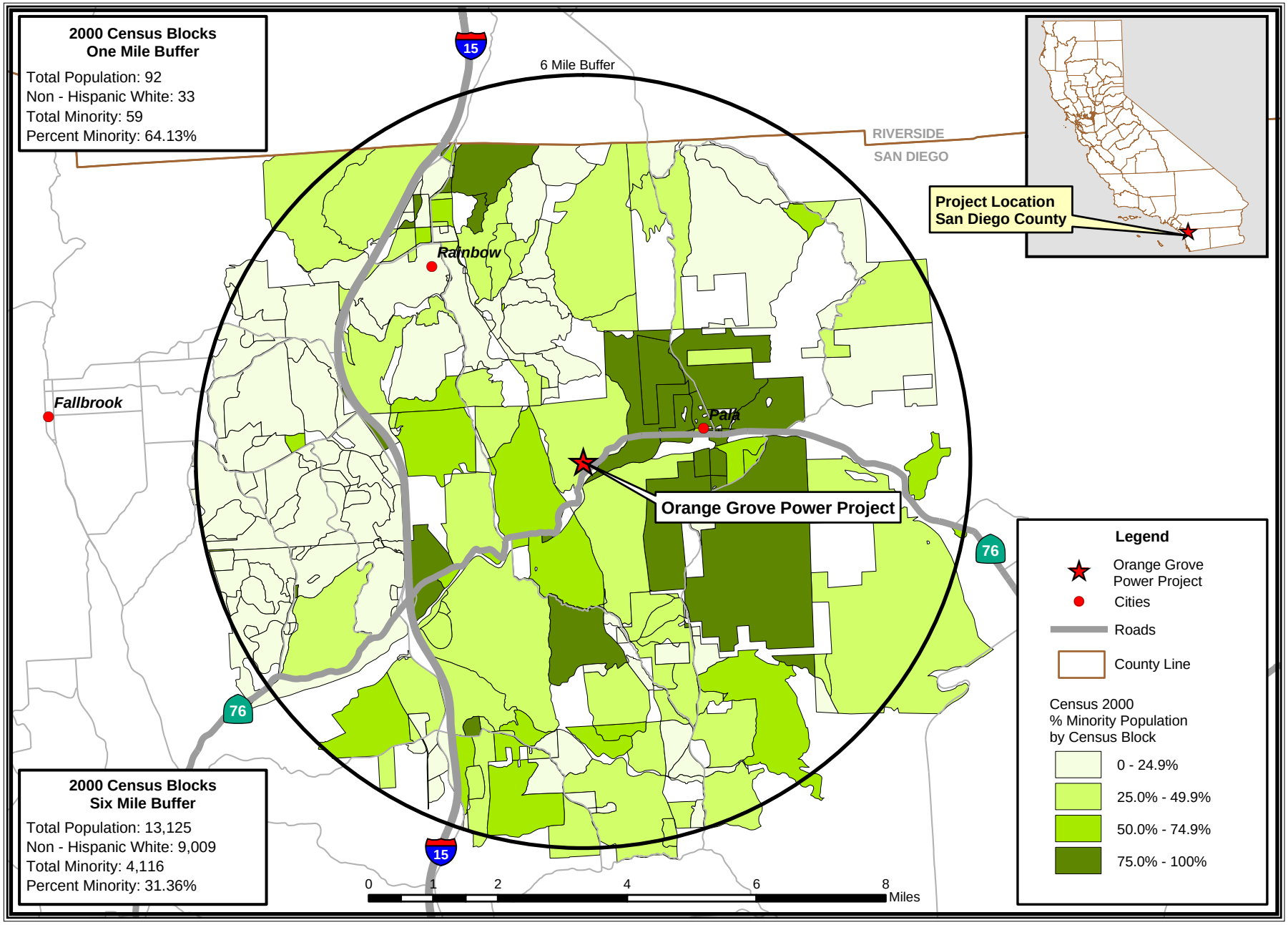
State of California, Employment Development Department (EDD) 2006. Labor Market Information, Occupational Employment Projections 2004-2014 San Diego-Carlsbad-San Marcos and the Riverside-San Bernardino-Ontario Metropolitan Statistical Areas.

U. S. Environmental Protection Agency (EPA), Office of Federal Activities. 1998. Final Guidelines for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance.

U. S. Office of Management and Budget (OMB). 2000. Current Population Reports, Series P-60 on Income and Poverty.

SOCIOECONOMICS - FIGURE 1

Orange Grove Project - Census 2000 Minority Population by Census Block - Six Mile Buffer



CALIFORNIA ENERGY COMMISSION, SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION, NOVEMBER 2008

SOURCE: California Energy Commission Statewide Power Plant Maps 2007 - Census 2000 PL 94-171 Data - Matrix PL2

SOIL AND WATER RESOURCES

Testimony of Cheryl Closson, P.G.

SUMMARY OF CONCLUSIONS

This section of the Staff Assessment analyzes the potential effects on soil and water resources that would occur from construction and operation of the proposed Orange Grove Project (OGP). Based on its assessment of the proposed OGP, staff has reached the following conclusions:

- Potential adverse impacts caused by soil erosion and storm water flows during construction and operation of the OGP would be mitigated by implementation of Best Management Practices in accordance with the required federal Construction and Industrial Activity Storm Water Pollution Prevention Plans; the county Storm Water Management Plan; and the Drainage, Erosion, and Sedimentation Control Plan, as proposed in Conditions of Certification SOIL & WATER-2, 3, 5 and 7.
- The main project facility would be constructed outside the designated 100-year floodplain and would not exacerbate flood conditions in the vicinity of the project. In addition, while sections of the gas pipeline would be located within the 100-year floodplain, the underground gas pipeline and associated metering station would not impede or redirect flood flows or exacerbate flood conditions in the area.
- The OGP's proposed water use would not result in significant adverse impacts on water resources and water quality with adoption of staff's proposed conditions of certification.
- Potential impacts to surface or groundwater quality from industrial or sanitary wastewaters generated by the OGP would be mitigated to a less than significant level through reuse onsite of industrial process wastewaters, proper management and disposal of oily wastewaters not suitable for reuse, and compliance with established septic system construction and use requirements.
- The proposed project would comply with applicable federal, state, and local laws, ordinances, regulations, and standards with adoption and implementation of staff's proposed conditions of certification.
- The OGP would not result in any unmitigated cumulatively significant adverse impacts to soil or water resources with adoption of staff's proposed conditions of certification.

INTRODUCTION

This section analyzes potential impacts to soil and water resources from the construction and operation of the OGP. The analysis specifically focuses on the potential for the project to cause impacts in the following areas:

- Whether construction or operation would lead to accelerated wind or water erosion and sedimentation.
- Whether the project would exacerbate flood conditions in the vicinity of the project.

- Whether the project's water use would cause a substantial, or potentially substantial, adverse change in the quantity or quality of groundwater or surface water.
- Whether project construction or operation would lead to degradation of surface or groundwater quality.
- Whether the project would comply with all applicable laws, ordinances, regulations and standards (LORS).

Where the potential for significant adverse impacts or inconsistency with LORS is identified, staff has proposed mitigation measures and/or conditions of certification to ensure consistency or reduce any potentially significant impacts to a level of insignificance. A list of acronyms used in this section is provided in Appendix A at the end of this section.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

The following federal, state, and local environmental laws, ordinances, regulations, and standards have been identified for the OGP. Compliance with LORS ensures the most appropriate use and management of both soil and water resources. The requirements of these LORS are specifically intended to protect human health and the environment. The potential for project compliance with these LORS is a major component of staff's analysis.

Soil and Water Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable LORS	Description
Federal	
Title 33, United States Code (U.S.C.), section 1251 et seq. — Federal Water Pollution Control Act (commonly called the Clean Water Act)	The Clean Water Act (CWA) established a broad national program for protecting water quality and regulating discharges of waste and pollutants into waters of the United States. It provides authority for establishment of water quality standards and waste discharge limits for point source discharges (such as those from industrial facilities, sewage treatment plants, and storm water). The act also prohibits discharges of pollutants without a permit or other authorization and allows authorized states to implement provisions of the act in lieu of the United States Environmental Protection Agency (U.S. EPA). Key CWA provisions include: • Section 401 - Water Quality Certification requirement for federally permitted activities (such as construction) that may result in discharges to surface waters and wetlands. • Section 402 - National Pollutant Discharge Elimination System (NPDES) permit program for point source discharges (including storm water). • Section 404 – Permit program addressing discharges of dredge or fill materials into surface waters and wetlands. This section is implemented by the United States Army Corp of Engineers (U.S. ACE).

Applicable LORS	Description
Title 42, U.S.C., section 6901, et seq. — Solid Waste Disposal Act of 1965 (as amended and revised by the Resource Conservation and Recovery Act of 1976, et al)	The Solid Waste Disposal Act, as amended and revised by the Resource Conservation and Recovery Act (RCRA), established requirements for the management of solid wastes (including hazardous wastes), landfills, underground storage tanks, and certain medical wastes. The law seeks to protect human health and the environment (including surface and groundwater) from improper management and disposal of waste and associated contaminants.
State	
California Constitution, Article 10, section 2, and California Water Code (CWC), section 100	These laws require that the water resources of the state be put to beneficial use to the fullest extent possible and that the waste, unreasonable use, or unreasonable method of use of water be prevented. The laws also require that conservation of such water be exercised with a view to the reasonable and beneficial use of the water in the interest of the people and for the public welfare.
CWC, Division 7, section 13000 et seq. — Porter-Cologne Water Quality Control Act	The Porter-Cologne Water Quality Control Act (Porter-Cologne) was established to protect the water quality and beneficial uses of waters of the state. The law gives broad authority to the State Water Resources Control Board (SWRCB) and nine Regional Water Quality Control Boards (RWQCBs) to establish water quality standards and waste discharge requirements, issue permits, and implement provisions of the federal Clean Water Act. Under Porter-Cologne, “waters of the state” include both surface and groundwaters.
CWC, section 13550	This section of Porter-Cologne establishes that the use of potable domestic water for non-potable uses (including industrial use) is a waste or an unreasonable use of the water if recycled water is available and meets the following conditions: the quality and quantity of the reclaimed water are suitable for the use; the cost is reasonable; the use is not detrimental to public health; and the use will not impact downstream users or biological resources.
CWC, section 13552.8	This section of Porter-Cologne allows any public agency to require the use of reclaimed water in cooling towers if reclaimed water is available and meets the requirements set forth in CWC section 13550; if there are no adverse impacts to any existing water right; and if appropriate mitigation or control is provided in the event that public exposure to cooling tower mist is possible.
Title 17, California Code of Regulations (CCR), Division 1, Chapter 5	This chapter of the CCR addresses the requirements for backflow prevention and cross connections of potable and non-potable water lines.
Title 22 , CCR, Division 4 — Environmental Health	The Environmental Health regulations address requirements for drinking water standards, water treatment and operator certification, and water recycling criteria (including tertiary treatment standards). The regulations are implemented by the California Department of Public Health (CDPH), formerly known as the California Department of Health Services.

Applicable LORS	Description
Title 23, CCR, Division 3 — SWRCB and RWQCBs	These regulations implement provisions of the CWC and the Porter-Cologne Water Quality Control Act. Among other things, the regulations address water rights, implementation of the federal Clean Water Act, discharges to land, underground tanks, and waste discharge requirements/NPDES permits.
SWRCB Water Quality Order No. 99-08-DWQ	The SWRCB regulates storm water discharges associated with construction projects to protect state waters. Under Order 99-08-DWQ, the SWRCB issued an NPDES General Permit No. CAS000002 for storm water discharges associated with construction activity affecting areas greater than or equal to one acre. Those subject to the order can qualify for the permit if they meet the criteria, prepare and implement an acceptable Storm Water Pollution Prevention Plan (SWPPP), and notify the SWRCB of planned construction with a Notice of Intent (NOI).
SWRCB Water Quality Order No. 97-03-DWQ	The SWRCB also regulates storm water discharges associated with the operation of certain industrial facilities. Order 97-03-DWQ established NPDES General Permit No. CAS000001 for storm water discharges from 10 general industrial facility categories, including steam electric generating facilities. As with the construction storm water general permit, facilities can qualify if they meet the criteria, prepare and implement an acceptable SWPPP, monitor and report as necessary, and submit an NOI to the SWRCB. Section E.5. of the General Permit also requires facility operators to comply with all local agency municipal storm water management programs developed to comply with NPDES permits issued to local agencies.
RWQCB, San Diego Region Order No. R9-2007-0001	The California Regional Water Quality Control Board (RWQCB), San Diego Region Order No. R9-2007-0001, issued on January 24, 2007, establishes NPDES Municipal Storm Water Permit No. CAS0108758 requirements for urban runoff in San Diego County. The county and city co-permittees are required to establish requirements within their jurisdictions to regulate discharges from municipal storm sewer systems into waters of the United States, as well as to develop and implement Urban Runoff Management Programs for the area. The San Diego County Watershed Protection Ordinance and Grading Ordinance have both been established and amended to be consistent with provisions of RWQCB Order No. R9-2007-001.
Warren-Alquist Act, Public Resources Code section 25500 et seq.	This law gives the California Energy Commission authority to certify the construction and operation of thermal electric power plants 50 megawatts (MW) or larger. The Energy Commission certification is in lieu of any permit required by state, regional, or local agencies, and federal agencies to the extent permitted by federal law (Pub. Resources Code, section 25500). The Energy Commission must review power plant applications for certification to assess potential environmental and public health and safety impacts, potential measures to mitigate those impacts (Pub. Resources Code, section 25519), and compliance with applicable governmental laws and standards [Pub. Resources Code, section 25523(d)].

Applicable LORS	Description
Local	
San Diego County Code of Regulatory Ordinances, Title 6 -Health and Sanitation, Division 8 - Sewage and Refuse Disposal, Chapter 3 - Septic Tanks and Seepage Pits (section 68.301 et seq.)	This ordinance establishes the requirements and standards for the design, installation, and maintenance of onsite wastewater treatment systems (OWTS), including septic tanks, leach lines, and seepage pits. CWC section 13282 allows RWQCBs to authorize local public agencies to issue permits and regulate OWTS. The San Diego County Department of Environmental Health is authorized to regulate OWTS throughout the county.
San Diego County Code of Regulatory Ordinances, Title 6, Division 7 – Water and Water Supplies, Chapter 8 – Watershed Protection, Storm Water Management and Discharge Control (section 67.801 et seq.).	This ordinance establishes requirements for watershed protection, storm water management and discharge control, and grading to protect water resources and improve water quality in San Diego County. The ordinances have been adopted in conformance with the requirements of the municipal storm water permit issued to San Diego County by the RWQCB.
San Diego County Code of Regulatory Ordinances, Title 8 – Zoning and Land Use Regulations, Division 7 – Excavation and Grading, Clearing and Watercourses (section 87.101 et seq.).	This ordinance establishes requirements for grading or clearing of properties in San Diego County. The ordinance includes requirements for erosion control and maintenance of drainage structures and protective devices, and also requires compliance with federal and state permits and plans addressing storm water management.
State Policies and Guidance	
SWRCB Resolution No. 75-58 — Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Power Plant Cooling (adopted June 19, 1975).	This SWRCB policy specifically addresses the use of inland waters for power plant cooling. The policy states that fresh inland waters should only be used for power plant cooling if other sources or other methods of cooling would be environmentally undesirable or economically unsound. The policy establishes a general hierarchy for cooling water whereby the lowest quality water reasonably available is to be utilized for evaporative cooling processes. It also includes cooling water discharge prohibitions.
SWRCB Resolution No. 77-1	SWRCB No. 77-1 encourages and promotes reclaimed water use for non-potable purposes.
SWRCB Resolution 88-63 —Sources of Drinking Water Policy	This policy states that all surface and groundwaters of the state are considered to be suitable, or potentially suitable, for municipal or domestic water supply, and should be designated as such by the RWQCBs, with the exception of certain waters (such as contaminated sources or process wastewaters).
The 2003 California Energy Commission *Integrated Energy Policy Report (IEPR)*	The *2003 IEPR* was developed and adopted pursuant to Public Resources Code sections 25301 and 25302. It includes a water and wastewater policy stating that the Energy Commission will approve the use of fresh water for cooling purposes by power plants it licenses only where alternative water supply sources and alternative cooling technologies are shown to be “environmentally undesirable” or “economically unsound.” In addition, the policy states that the Energy Commission will also require that zero-liquid discharge technologies be used to manage project wastewater unless such technologies are shown to be “environmentally undesirable” or “economically unsound.”

PROJECT DESCRIPTION AND SETTING

As noted in the **PROJECT DESCRIPTION** section of this document, the proposed Orange Grove Project (OGP) would consist of the construction and operation of a 96-megawatt (MW) (net) simple cycle electrical generation facility in northern San Diego County, on State Route (SR) 76 near the community of Pala (about 0.1 mile north of the intersection of SR 76 and Pala Norte Road). The proposed facility would provide electricity to San Diego Gas and Electric Company (SDG&E) during peak electricity demand times. The proposed 8.3-acre project site, adjacent 5-acre construction laydown area, and sections of the gas pipeline and transmission connection would be located within a larger 202-acre property currently owned by SDG&E. This SDG&E property includes the former citrus grove, a storage/residence compound to the south of the project site, and the existing SDG&E Pala electrical substation to the southwest of the project site. Power from the facility would be transmitted to the grid via a 0.3-mile[1] underground electric transmission line to the SDG&E Pala Substation and a 2.4-mile underground natural gas pipeline would be constructed to provide gas from an existing SDG&E gas line to the west.

Equipment for the proposed generating facility would consist of two 50-MW General Electric (GE) LM6000PC SPRINT[2] combustion turbine generators (CTGs), each equipped with a water injection system to reduce nitrogen oxide (NOx) formation, and a selective catalytic reduction system to further control NOx and carbon monoxide (CO) emissions. The project would be designed to operate at a maximum of 6,400 hours per year (with each CTG operating 3,200 hours); however, the normal operation (expected case design) would likely have both CTGs operating 1,000 hours per year. In addition to the SPRINT intercooling system integrated into the engine, inlet air for the CTGs would be cooled using a chilled water system package chiller. The inlet air chiller system would use a three-cell cooling tower for evaporative cooling of the chiller condensers.

Along with the CTGs, the facility would include a trailer-mounted demineralized water treatment system, a reverse osmosis (RO) water treatment system, a 535,000 gallon raw water storage tank, a 414,000 gallon reclaimed water storage tank, a 100,000 gallon demineralized water storage tank, and a 40,000 gallon wastewater storage tank. A free-span bridge would be constructed over a jurisdictional drainage for access to the facility from the main entrance off of Pala Del Norte Road. Storm water runoff at the site would be managed via diversion ditches and a detention pond. A septic system and leach field would be constructed and utilized onsite for domestic use drains, toilets, and related sanitary wastes and wastewaters.

Sections of the project transmission line and gas pipeline route would be located in mountainous terrain and would also cross six jurisdictional drainages. About a half mile of the gas pipeline would be constructed in the mountainous terrain and would require use of rock trenching to dig the pipeline trench due to the shallow bedrock in the area. To avoid impacts to the six drainages, the OGP would employ horizontal directional

[1] Note: Site acreages, distances, and linear feature lengths given are approximate measures.

[2] The SPRINT acronym stands for the GE spray-intercooled power boost technology that is integrated into the LM6000PC unit. The technology uses water injected into the engine's compressor section to cool the temperature of the compressor and increase output from the unit during warm or hot weather.

drilling (HDD) to run the transmission line and gas pipeline under the drainages to avoid impacts to waters of the United States and waters of the State. In addition, HDD will be used where the gas pipeline crosses SR 76 to avoid disruption and construction impacts on traffic flow.

The OGP proposes to use both potable water and tertiary-treated reclaimed water for plant process needs. Water use requirements at the maximum design level would be 62 acre-feet per year (AFY) of potable water and 38.7 AFY of reclaimed water. Expected case use requirements would be 21.1 AFY of potable water and 12.1 AFY of reclaimed water. Both water supplies would be provided by the Fallbrook Public Utility District (FPUD) and would be trucked to the facility from separate water pick-up stations to be constructed for the OGP. The potable water pickup station would be located on a 0.2-acre parcel, nine (9) miles from the main OGP facility site. The reclaimed water pickup station would be located on a 0.4-acre parcel, 15.6 miles from the main OGP facility site.

The construction and start-up testing phase of the OGP is estimated to take six (6) months. Once constructed, the plant would be capable of operating for at least 25 years. (OGE 2008a, pages 2-29 and 2-33.) However, as a peaking power plant, the applicant only expects to operate the facility about 60 days per year (OGE 2008a, page 1-5).

REGIONAL SETTING

The proposed project is located in northern San Diego County, approximately 50 miles north of the city of San Diego. The project area lies in the western foothills of the Peninsular Ranges, a roughly north-south trending set of mountain ranges in southwestern California.

The region has a Mediterranean climate that is typified by mild winters and warm to hot, dry summers. Temperatures (in degrees Fahrenheit) average from the mid-40’s to the low 70’s in the winter and upper 50’s to upper 80’s or higher in the summer. Annual rainfall/precipitation in the coastal plains and inland foothills averages between 12 and 18 inches per year; while precipitation in the higher elevations of the Peninsular Range Mountains can average between 30 and 45 inches per year. The majority of this precipitation occurs between November and April.

The OGP site is located within the San Luis Rey Hydrologic Unit, which is an east-west trending watershed encompassing approximately 565 square miles. The San Luis Rey River is the watershed’s major river. The San Luis Rey Valley groundwater basin underlies the river in the alluvial deposits of the valley and is recharged by infiltrating irrigation water and storm water flows captured by the river and its tributaries. As with the river, groundwater in the basin flows west toward the Pacific Ocean.

PROJECT SITE AND VICINITY DESCRIPTION

The main project site is located on a southward sloping (approximately 10%) alluvial fan at an elevation of 360 to 440 above sea level. Immediately north of the site the ground slopes up to about 1,700 feet to a ridge that surrounds the site to the north, northeast, and west. The site is located between two north-south seasonal, moderately incised

drainages that drain storm water from the small watershed around and above the site. The San Luis Rey River is located to the south of the main project site and runs parallel to and south of SR 76.

Soils

Surface soils at the main project site, along the gas and transmission linear, and at the water pick up stations generally consist of fine to coarse sandy loams, sand, and loams developed mainly from local plutonic igneous bedrock (i.e., granodiorite, tonalite, and gabbro). The main soil units and unit characteristics are listed below in **Soil and Water Table 2**.

Soil and Water Table 2
Main Soil Types Potentially Affected and Characteristics

Primary Soil Unit Name and Composition	Slope Class (%)	Erosion Factors[1]		Erosion Hazard	Permeability	Drainage
		K	T			
Las Posas stony fine sandy loam (LrE) – main project site, construction laydown, gas pipeline, and transmission interconnection.	9–30%	0.24	3	Moderate to High	Moderately Slow	Well Drained
Steep gullied land (StG) – main project site, gas pipeline, and transmission line connection.	N/A	N/A	N/A	Severe	N/A	N/A
Las Posas stony fine sandy loam (LrG) – gas pipeline.	30-65%	0.24	3	High to Very High	Moderately Slow	Well Drained
Cieneba very rocky coarse sandy loam (CmrG) – gas pipeline.	30-75%	0.20	2	High to Very High	Moderate	Well Drained
Tujunga sand (TuB) – gas pipeline.	0-5%	0.15 - 0.17	5	Slight	Very Rapid	Excessively Drained
Visalia sandy loam (VaA) – gas pipeline.	0-2%	0.17 - 0.49	5	Slight	Moderately Rapid	Moderately Well Drained
Riverwash (Rm) (sand, gravels, and cobbles) – gas pipeline	N/A	0.05	N/A	Severe	Rapid	Excessively Drained
Cieneba coarse sandy loam (CID2) – reclaimed water station.	5-15%	.20	2	Slight to Moderate	Rapid	Excessively Drained
Fallbrook sandy loam (FaB) – reclaimed water pickup station.	2-5%	0.20 - 0.28	4	Slight	Moderate	Well Drained
Vista coarse sandy loam (VsC) – reclaimed water pickup station.	5-9%	0.24 - 0.28	3	Slight to Moderate	Moderately Rapid	Well Drained
Wyman loam (WmC) – fresh water pickup station.	5-9%	0.24	5	Slight to Moderate	Moderately Slow	Well Drained

1. K is a measure of relative susceptibility to sheet and rill erosion by water. The measure ranges from 0.02 to 0.69, with lower values representing a lower susceptibility to erosion. T represents soil loss tolerance, defined as the maximum amount of erosion at which the quality of the soil as a medium for plant growth can be maintained. Values range from 1 to 5 (tons per acre per year), with 5 representing soils less sensitive to degradation. (OGE2008a, Table 6.4-1)

N/A = not available/not reported.

Sources: OGE 2008a; and Natural Resources Conservation Service (NRCS) Web Soil Survey ,<websoilsurvey.nrcs.usda.gov>.

The applicant reports that the Soil Conservation Service descriptions of the Las Posas sandy loam series indicate that the shrink-swell potential for this soil is high. However, results of geotechnical testing conducted for the site indicate that the site soils do not appear to have a high enough expansive clay content to require special engineering measures (OGE 2008a, page 6.3-7).

Topsoil at the main project site is generally 12 to 18 inches deep and is underlain by weathered bedrock and alluvial fan deposits (fanglomerate) (OGE 2008a, Appendix 6.3 A.2).

Surface Waters and Flood Plain Designation

The main surface water body in the project area is the San Luis Rey River, located to the south of SR 76. The river generally runs from east to west and ultimately discharges into the Pacific Ocean near the city of Oceanside. The San Luis Rey River is listed as a Clean Water Act (CWA) section 303(d) impaired water body for chloride and total dissolved solids. Near the project site the river was diverted into a diked channel 0.5 miles south of SR 76 to accommodate aggregate mining in the river bed. After mining operations stopped, several large ponds developed in the old mining pits due to groundwater seepage where excavations reached below the water table. In addition to the river, the project area includes several seasonal/ephemeral drainages that transport surface water flows during rain events in the area. While these drainages are usually dry during summer, they are considered to be both waters of the United States and waters of the State.

The main project site and adjacent construction laydown area are located outside the 100-year flood plain, on an old alluvial fan that lies between two drainages. These drainages collect storm water runoff from a small upstream watershed and discharge southward into culverts that drain to the south of SR 76 and ultimately discharge to the San Luis Rey River. The western portion of the gas pipeline route is located within the 100-year flood plain, but will not contain any structures that would impede or redirect flood flows.

Groundwater

Groundwater beneath the main project site is expected to occur between 50 and 100 feet below the ground surface, depending on the location. However, localized areas of shallower groundwater may develop during periods of heavy rain and saturated ground conditions (OGE 2008a, Appendix 6.3-A.2). Groundwater along the western sections of the gas pipeline may be encountered at much shallower depths due to lower elevation and proximity to the river.

Groundwater quality in the area is characterized by relatively high total dissolved solids (TDS), chloride, and sulfate concentrations. TDS concentrations average between 600 and 1,200 milligrams per liter (mg/L). The closest water wells to the site are located south of SR 76 near the former mining operations. (OGE 2008a, section 6.5).

Project Water Supply

The OGP proposes to use both potable water and recycled water for plant industrial uses. While the OGP is located within the boundaries of the Rainbow Municipal Water

District (RMWD), the district does not offer recycled water and the nearest RMWD potable water distribution line is several miles from the main project site. Consequently, water supplies for project operations would be provided by the FPUD and would be trucked to the site from pickup locations in Fallbrook. Water for evaporative cooling of the inlet air chiller would come from tertiary-treated recycled water and would be stored onsite in a 414,000 gallon recycled water storage tank. Potable water for the water demineralizer system, fire protection water, sanitary system uses, and landscape watering would also be obtained from FPUD and transported to the facility by truck. This water would be stored onsite in the 535,000 gallon raw water/fire protection water storage tank. Bottled water will be provided for drinking water supplies.

Summaries of the OGP's proposed water use are provided below in **Soil and Water Tables 3 and 4**.

Soil and Water Table 3
Proposed OGP Operation Potable Water Use

Water Use	Average Use Rate[1] (gpm)	Instantaneous Use Rate[2] (gpm)	Annual Use[3] (AFY)
Maximum/Design Case[4]			
Demineralized Water for SPRINT and NOx control	41.6 (12.1 for SPRINT and 29.5 for NOx)	114.0	67.2
Sanitary Systems and Facility Wash Down (Intermittent)	0.15	--	0.24
Landscape Drip	1.4	--	2.3
Recovered Cooling Tower Blowdown/Chiller Coils Condensation -- RO Concentrate Recycled to Raw Water Tank (shown as negative value)	-4.7	-13.0	-7.7
Total - Max Design Case	**38.5 gpm**	**101 gpm**	**62.0 AFY (18 for SPRINT and 44 for NOx)**
Expected Use Case[5]			
Demineralized Water for SPRINT and NOx control	13.0	114.0	21.0
Sanitary Systems and Facility Wash Down (Intermittent)	0.15	--	0.24
Landscape Drip	1.4	--	2.3
Recovered Cooling Tower Blowdown/Chiller Coils Condensation – RO Concentrate Recycled to Raw Water Tank (shown as negative value)	-1.5	-13.0	-2.4
Total – Expected Use Case	--	**101 gpm**	**21.1 AFY (6.1 for SPRINT and 15 for NOx)**

[1] Annual use rate converted to gallons per minute (gpm) (Instantaneous rate x 3200 operating hours/ 8760 hours)
[2] Instantaneous use rate with ongoing operations at the summer design condition.
[3] Average annual use based on 3,200 hours of two CTGs operating at summer design conditions (6,400 total hours).
[4] Max design case based on both units operating at full load at summer design conditions.
[5] Expected use case based on both units operating at full load at summer design conditions for a total of 1,000 hours of annual plant operation.

Source: OGE 2008a, section 2.0, Table 2.6-1a.

Soil and Water Table 4
Proposed OGP Operation Reclaimed Water Use

Water Use	Average Use Rate[1] (gpm)	Instantaneous Use Rate[2] (gpm)	Annual Use[3] (AFY)
Maximum/Design Case4			
Inlet Air Chiller Cooling System	38.0	104	61.3
Recovered Cooling Tower Blowdown/Chiller Coils Condensation -- RO Permeate Recycled to Recycled Water Tank (shown as negative value)	-14.0	-38.3	-22.6
Total - Max Design Case	**24.5 gpm**	**65.7 gpm**	**38.7 AFY**
Expected Use Case[5]			
Inlet Air Chiller Cooling System	11.8	104	19.3
Recovered Cooling Tower Blowdown/Chiller Coils Condensation -- RO Permeate Recycled to Recycled Water Tank (shown as negative value)	-4.4	-38.3	-7.1
Total – Expected Use Case	**7.4 gpm**	**65.7 gpm**	**12.1 AFY**

[1] Annual use rate converted to gallons per minute (Instantaneous rate x 3200 operating hours/ 8760 hours)
[2] Instantaneous use rate with ongoing operations at the summer design condition.
[3] Average annual use based on 3,200 hours of two CTGs operating at summer design conditions (6,400 total hours).
[4] Max design case based on both units operating at full load at summer design conditions.
[5] Expected use case based on both units operating at full load at summer design conditions for a total of 1,000 hours of annual plant operation.

Source: OGE 2008a, section 2.0, Table 2.6-1b.

Water quality data for the FPUD recycled water and potable water supplies are presented below in **Soil and Water Table 5**.

Soil and Water Table 5
Water Quality for Proposed Water Sources

Parameter (mg/L)	FPUD Recycled Water	FPUD Potable Water
Alkalinity (total)	--	98
Boron	0.392	140
Calcium	65.2	53
Chloride	157	92
Fluoride	0.42	0.20
Iron	0.041	--
Magnesium	26.3	22
Nitrate	8.4	ND
pH	--	8.1
Potassium	17	4.2
Sodium	131	83
Sulfate	208	169
Total dissolved solids (TDS)	776	495

Source: OGE 2008a, Tables 6.5-1; and FPUD 2008 Consumer Confidence Report.

In addition to project operational water supply requirements, the OGP would require approximately 4.8 acre-feet of water for construction uses as shown below in **Soil and Water Table 6**.

Soil and Water Table 6
Construction Water Use Requirements

Construction Activity	Peak Water Use In gallons per day (gpd)	Total Water Use In gallons (gal)
Mass grading (including pipeline trenching and backfill)	15,000	690,000
Horizontal directional drilling (HDD)	7,100	219,000
Foundations	4,200	644,000
	TOTAL	**1,553,000 gal (4.8 acre-feet)**

Source: TRC 2008e, Data Response #58.

Wastewater

Project sanitary wastes/wastewater would be generated from domestic drains and two restrooms located in the facility's Service Building. A public sewer system is currently not available in the project area, so these wastes would be discharged to an onsite sanitary waste septic system comprised of a septic tank and leach field (OGE 2008a, Appendix 6.5-H).

Plant process wastewater (such as blowdown from the chiller system and non-oily wastewaters) would be collected and recycled onsite using the RO system. Wastewaters not suitable for recycling through the RO system (such turbine wash water and oily water from drains in the turbine and gas compressor areas and service building floor) would be collected, temporarily stored onsite, and then transported offsite for appropriate treatment, reuse and/or disposal. Approximately 320 gallons per month of this oily wastewater would be generated from turbine wash and plant drains (TRC 2008a, Data Response #61, 62, and 63).

Existing Site Conditions

A Phase I Environmental Site Assessment (ESA) was conducted in June 2008 by TRC Solutions, Inc. (TRC) for the proposed OGP (OGE 2008a, Appendix 6.14-A). This report addressed the main 8.3-acre facility site and surrounding vicinity, but did not fully address the SDG&E storage area (to be used during project construction) or properties along the proposed gas pipeline route. In response to Data Request #68, the applicant submitted an additional Phase I ESA (TRC 2008e, Exhibit 68-1) that did assess the properties along the proposed gas pipeline but again excluded evaluation of the SDG&E storage area.

The Phase I ESAs submitted by the applicant did not identify any Recognized Environmental Conditions (RECs) associated with the main property site or the gas and transmission connection linear. However, the documents reported that the location and condition of the septic tank and leach field associated with the SDG&E storage area residence is not known. The documents also cited previous Phase I ESAs conducted for the SDG&E property that identified the unknown condition of the septic system as a

potential REC and recommended that the location and condition of the septic tank be identified (TRC 2008e, pages 4-7 and 5-4).

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

This section provides a discussion of the potential direct, indirect, and cumulative impacts to soil and water resources that may result from construction, operation, and maintenance of the proposed OGP. While all projects will likely have impacts, the goal is to limit any adverse impacts to an insignificant or acceptable level, or to avoid them altogether, if possible. Staff's analysis of potential impacts consists of a brief description of the potential impact, an analysis of the relevant facts, and application of the threshold criteria for significance to the facts. Mitigation measures may be necessary to reduce potentially significant impacts to a level of insignificance. If mitigation is warranted, staff provides a summary of the applicant's proposed mitigation and a discussion of the adequacy of the proposed mitigation. Where necessary, staff presents additional or alternative mitigation measures or recommends specific conditions of certification related to a potential impact and any required mitigation measures.

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

Staff evaluated the potential impacts to soil and water resources including the effects of construction and operation activities that could result in erosion of soils, the deposition of sediments into surface waters or the contamination of either groundwater or surface water. Staff also evaluated the potential of the project's proposed water use to cause a significant depletion or degradation of local and regional water resources

To evaluate if significant impacts to soil or water resources would occur, staff assessed:

- Whether construction or operation would lead to accelerated wind or water erosion and sedimentation.
- Whether the project would exacerbate flood conditions in the vicinity of the project.
- Whether the project's water use would cause a substantial, or potentially substantial, adverse change in the quantity or quality of groundwater or surface water.
- Whether project construction or operation would lead to degradation of surface or groundwater quality.
- Whether the project would comply with all applicable LORS.

These criteria are based on the California Environmental Quality Act (CEQA) Guidelines and performance standards (CCR 2008). The threshold of significance for project impacts is based on the ability of the project to be built and operated without violating applicable erosion, sedimentation, flood, surface or groundwater quality, water supply, or wastewater discharge standards. The federal, state, and local LORS and policies presented in **Soil and Water Table 1** represent the applicable standards used for the OGP analysis. These LORS support a comprehensive regulatory system, with adopted standards and established practices designed to prevent or minimize adverse impacts to soil and water resources. For those impacts that exceed standards or result in a significant adverse impact, conditions of certification may be necessary to ensure compliance with standards or reduce the impacts to a less than significant level.

Staff's analysis, determination of potential impacts, and evaluation of appropriate mitigation measures relies on estimates and information provided by the applicant regarding the construction and operation of the OGP. Applicable scientific, technical, and LORS/policy-related literature and expert opinion was also consulted in the development of staff's analysis.

DIRECT/INDIRECT IMPACTS

The direct and indirect impacts and mitigation discussion presented below is divided into a discussion of impacts related to project construction activities and a discussion of impacts related to facility operation.

Construction Impacts

The construction phase of OGP is expected to take approximately six (6) months and will include site grading, linear trenching, facility construction, and final site stabilization prior to operation. In general, construction activities can lead to adverse impacts to soil and water resources if the activities are not properly mitigated. Potential impacts to soils during construction are possible due to soil erosion or release of hazardous substances. Increased storm water runoff from cleared, graded, and compacted construction sites can increase the potential for off-site flooding. In addition, local water bodies and water quality can be impacted by increased sediment and contaminant loads in storm water discharged from construction sites. Potential construction-related impacts to soil, storm water, and water quality, including the applicant's proposed mitigation measures and staff's proposed conditions of certification, are discussed below.

Existing Site Conditions

The OGP proposes to use parts of the SDG&E storage area to locate construction trailers and offices. As noted in the **PROJECT SITE AND VICINITY DESCRIPTION** section above, the Phase I ESA documents submitted for the OGP reported that the location and condition of the septic tank and leach field associated with the SDG&E storage area residence is not known. The documents also cited previous Phase I ESAs conducted for the SDG&E property that identified the unknown condition of the septic system as a potential REC and recommended that the location and condition of the septic tank be identified (TRC 2008e, pages 4-7 and 5-4).

Staff is concerned that, by not knowing the location of the septic tank and leach field, OGP construction activities may inadvertently damage the septic system (by driving over or heavily weighting the ground immediately above the septic tank and leach field) and thereby cause or contribute to potential soil and groundwater contamination. To prevent project construction-related damage to the storage area septic system, the applicant has reported that SDG&E, as the storage area owner, has agreed to abandon the septic system in place prior to the start of OGP construction and to block off any surface areas overlying the system that may present safety issues during construction (TRC 2008g). To help ensure that OGP construction activities do not adversely impact soil or groundwater by damaging the storage area septic system, staff propose Condition of Certification **SOIL & WATER-1**, requiring that, prior to OGP construction, the project owner provide confirmation that all elements of the storage area septic system have been identified and clearly located, that the system septic tank has been properly closed, and that areas overlying the storage area septic system are clearly

flagged and blocked off during OGP construction where construction activities may present safety issues or damage septic system elements.

Soil Erosion Control and Storm Water Management

Site grading and construction activities can expose and disturb the soil, leaving soil particles vulnerable to erosion by wind and water. Soil erosion from wind and water may cause a loss of topsoil and increased sedimentation of surface waters downstream. The magnitude, extent, and duration of these impacts depend on several factors, including the proximity of the site to surface water, the soils affected, and the method, duration, and time of year of activities. Prolonged or high intensity rain events during construction can result in increased site soil erosion and sediment discharges to nearby water bodies. In addition, high winds during grading and excavation activities can result in wind-borne erosion leading to increased particulate emissions that adversely impact air quality. Implementing appropriate erosion control measures will help conserve soil resources, maintain water quality, protect property from erosion damage, prevent accelerated soil loss, and protect air quality.

Construction of the OGP would require disturbance of approximately 36 acres of land, including 8.3 acres at the main facility site; 1.0 acres for site access; 2.2 acres for the site fire protection fuel modification zone; 5.0 acres at the site construction laydown area; 18.9 acres along the gas pipeline/linear facilities corridor, including staging areas and the gas metering station; 0.2 acres at the potable water pickup station; and 0.4 acres at the recycled water pickup station. Soils in the project areas are dominantly fine to coarse sandy loams with stones, cobbles and rocks common and are all generally well drained. Soils at the main project site and parts of the gas pipeline in the mountainous sections have a moderate to very high/severe erosion hazard. Whereas the soils along the western gas pipeline sections and the water pickup stations have erosion hazards that are slight to moderate.

The pre-construction gradient at the main project site is approximately 10%, sloping from north to south. Construction of the OGP would require grading of the main facility site to establish a pad with a gently sloping 1% grade. Cut/fill slopes surrounding the site would be established at a 3:1 horizontal to vertical slope. Excavation and fill requirements at the main site are expected to roughly balance out at 56,000 cubic yards each. However, some rock from construction of the gas pipeline may be used at the main site for crushed rock surfaces in lieu of imported rock. Excavations at the main project site and along the gas pipeline will require offsite disposal of approximately 650 cubic yards of rubble and concrete debris (TRC 2008e, Data Response #70).

Potential soil loss for the OGP main project site was analyzed by the applicant using the Revised Universal Soil Loss Equation (RUSLE) (OGE 2008a, Appendix 6.4-C). The RUSLE analysis uses site slope, soil erodibility, and erosion management factors to estimate the average annual soil loss from rainfall sheet and rill erosion and overland flow. The pre-development RUSLE value calculated for the main project site is approximately 1.43 tons of soil lost per acre per year. The post-development value was calculated to be 0.40 tons of soil lost per acre per year. These values indicate that construction of the proposed facility would potentially decrease erosion at the site by lessening the site slope and controlling sediment discharge through storm water management features and Best Management Practices (BMPs).

The Preliminary Draft Drainage, Erosion, and Sediment Control Plan (DESCP) submitted by the applicant as part of data response #57 (TRC 2008e, Exhibit 57-1) provides information on the BMPs proposed for mitigation of potential soil erosion and storm water runoff impacts associated with construction and operation of the OGP. BMPs proposed by the applicant and supported by staff include use of the following: silt fences, fiber rolls, gravel bag berms, sandbag barriers, storm drain inlet protection, sediment basins, and preservation of existing vegetation. Wind erosion BMPs include stabilized construction entrance/exit, water application, and stockpile management using silt fences and plastic covers to prevent wind dispersal of sediments from stockpiles. In addition, BMP controls would be implemented for activities such as equipment maintenance, waste management, and construction materials pollution control to prevent contamination of soil and storm water.

Construction of the gas pipeline along existing roads and right-of-ways in the mountainous terrain west of the main site will require rock trenching and additional post construction erosion control BMPs due to the shallow bedrock and steep terrain. A hydraulic excavator will be used to excavate solid rock and allow digging around and under boulders. Trench boxes and breakers (ditch plugs) would be used stabilize the pipeline trench. Silt fences, sand bags, and gravel bag barriers would be used to control erosion during construction. Soil diversion berms would be used to control post-construction erosion in the mountainous areas after the pipeline trench is backfilled and compacted. Due to the steepness of the terrain, the berms will be approximately 2.5 feet high and will extend across the full width of the right-of-way to prevent water flow back onto the right-of-way. (TRC 2008e, Data Response #64.)

Soil erosion control and water quality BMPs will also be employed during bridge construction and HDD activities associated with linear construction around drainages to prevent impacts to waters of the State. BMPs will include silt fencing, fiber rolls and check dams, along with stockpile management, dewatering operations, liquids management, and contingencies for management of drilling fluids in the event of a “frac-out” or release of drilling fluids from the bore hole to the surface through fractures or conduits in the rock or overlying materials. A draft frac-out contingency plan for the HDD activities is provided as Attachment D to the Streambed Alteration Agreement submitted to the California Department of Fish and Game by the applicant on August 11, 2008 (TRC 2008i).

Staff concurs with the applicant’s proposed BMPs and also proposes the adoption of the following conditions of certification to ensure compliance with project grading, storm water management and erosion control LORS.

- **SOIL & WATER-2** requires the project owner to comply with all of the requirements of the General National Pollutant Discharge Elimination System (NPDES) Permit for Discharges of Storm Water Associated with Construction Activity, including the development and implementation of a construction Storm Water Pollution Prevention Plan (SWPPP).
- **SOIL & WATER-3** requires the project owner to develop and obtain Compliance Project Manager (CPM) approval for a site-specific final DESCP that addresses all project elements and ensures protection of water and soil resources for both the construction and operational phases of the project.

- **SOIL & WATER-4** requires the project owner to comply with all applicable requirements associated with the county of San Diego's grading ordinance and permit. Required items include submittal of complete grading plans and drawings, drainage and soil reports, and a Storm Water Management Plan (SWMP) prepared in conformance with the San Diego County Excavation and Grading, Clearing and Watercourses ordinance requirements.
- **SOIL & WATER-5** requires the project owner to comply with all applicable requirements of San Diego County Watershed Protection, Storm Water Management and Discharge Control, and Grading Ordinance (No. 9926) (also known as the Watershed Protection Ordinance).

Staff concludes that potential soil loss, erosion, and storm water impacts from project site grading and construction would be less than significant with implementation of all of the above conditions of certification.

Surface Waters and Hydrology

A jurisdictional waters and wetland delineation report was prepared for the project site (OGE 2008a, Appendix 6.5-B) and six drainages and drainage tributaries were identified as potential waters of the United States and waters of the State. To avoid potential impacts to these jurisdictional waters, the project proposes to use a free-span bridge design for construction of the site entrance bridge over the drainage on the western edge of the main facility, and also use HDD for construction of the transmission line and gas pipeline under the drainages. The U.S. Army Corp of Engineers (U.S. ACE) has determined that a CWA section 404 dredge and fill permit would not be required for the project (OGE 2008d). Because the federal CWA section 404 permit would not be required, the project would also not require a CWA section 401 water quality certification. In addition, the San Diego RWQCB confirmed that Waste Discharge Requirements (WDRs) would also not be required for the HDD activities (CEC 2008q).

Site grading and construction would alter drainage patterns in the area by diverting storm water run-on from the north to flow around the site toward the existing drainage located to the west of the facility. Storm water on the facility site would be routed to a storm water detention basin to be constructed in the southeast portion of the project site. The storm water in the detention basin would then be discharged to culverts to the south, toward the San Luis Rey River. Because the site would discharge storm water runoff into a water of the United States, the project would be required to comply with the federal General NPDES Permit for Discharges of Storm Water Associated with Construction Activity, along with any local storm water management requirements established by San Diego County for compliance with the county's municipal storm water permit, per **SOIL & WATER-2 and 5**. The NPDES permits establish storm water effluent limitations, specify sampling, monitoring and reporting requirements, and require preparation and implementation of a SWPPP for all construction activities, including bridge construction and use of HDD for pipeline construction under drainages. The draft DESCP submitted by the applicant provides information on the applicant's proposed BMPs to address potential storm water runoff impacts associated with project construction activities. The applicant also provided preliminary information on the sizing of the permanent storm water detention basin that would be used during both construction and operation of the OGP facility (OGE 2008a, Appendix 6.5-A).

With implementation of proposed Conditions of Certification **SOIL & WATER-2, 3, 4, and 5**, staff believes that project construction activities would have a less than significant impact on surface waters and hydrology in the project area.

Water Resources and Supply

It is anticipated that the peak daily construction water use would be around 15,000 gallons, and the project's total construction water use would be approximately 4.8 acre-feet (AF) over the 6-month construction period (TRC 2008e, Data Response #58). The applicant identified RMWD as the likely source of water for project construction needs. An email confirmation was received from RMWD stating that the district is willing to provide construction water to the project consistent with district rules and regulations (RMWD 2008b).

Given the relatively small volume of water needed during project construction, the availability of a sufficient supply of water from RMWD, and the water quality protection requirements that would be applied during project construction as part of the erosion control and storm water management requirements, staff does not anticipate any significant adverse impacts to area water supplies or surface or groundwater resources from project construction water use.

Although the applicant has identified RWMD as the likely source for construction water, they have stated that they do not intend to limit their construction contractors to procuring construction water only from RMWD. While staff anticipates no significant adverse impacts from use of construction water supplied by RMWD, staff has not analyzed the potential impacts that might be associated with use of water from sources other than RMWD. Staff is concerned that construction water obtained from sources other than the identified RMWD source may result in adverse impacts if the water is not obtained legally from appropriate, uncontaminated water sources. The applicant has stated that they are amenable to a condition of certification requiring that the sources of water used during construction be reported to the Energy Commission to assure that water is obtained from existing, legal supplies that will not result in new environmental impacts. Staff concurs with the applicant's proposed condition and recommends Condition of Certification **SOIL & WATER-6** requiring the project owner to report to the Energy Commission the source(s), volume, and providers of water procured for use during construction of the OGP.

Wastewater

During project construction, sanitary wastes and wastewaters would be managed and collected in portable, self-contained chemical toilets. The portable toilets would be emptied at least weekly and the waste would be transported by a licensed hauler to an authorized sanitary sewer location or wastewater treatment facility for disposal (TRC 2008e, Data Response #57).

Other wastewaters generated during construction may include equipment wash down waters, groundwater from excavation dewatering, drilling muds/fluids, and storm water. Equipment wash down water would be contained and collected in designated areas, and then properly disposed of offsite. Excavation dewatering fluids would be contained in portable tanks and tested prior to offsite disposal. Proposed Conditions of

Certification **SOIL & WATER-2, 3, 4, and 5** would require all project construction wastewaters and storm water runoff to be managed to protect surface and groundwater in accordance with the requirements established by the NPDES General Construction Storm Water Permit and SWPPP, the DESCP, and the provisions of the San Diego County watershed protection and grading ordinances. Staff concludes that project construction wastewaters would result in a less than significant impact on soil and water resources and supplies if the project complies with LORS and the above conditions of certification are implemented.

Operation Impacts

Soils

After construction approximately one (1) acre of the 5.2 acres within the fencing of the main facility site would be covered by concrete, buildings or other impervious material; approximately 3.22 acres would be covered by gravel; and the rest would be landscaped (OGE 2008a, Appendix 6.5-A). The proposed gravel and landscape coverage would reduce any soil erosion impacts from operation of the facility to a less than significant level.

Surface Hydrology and Flooding

The proposed OGP facility would be located outside the 100-year floodplain and would not exacerbate flood conditions in the vicinity of the project (OGE 2008a, section 6.5). The project would not be exposed to tsunami or seiches given its location and distance from any large water bodies.

Offsite storm water from the north would be routed around the facility using a diversion channel and would be directed to the existing drainage on the west side of the facility. Storm water from the facility site would be managed by use of storm drains and a storm water detention basin. The drainage area for the facility site is estimated to be 5.2 acres and includes all areas within the fenced yard, the detention basin area, and the berm on the north side of the facility. Storm water runoff within the facility would be directed to six onsite storm drains that would then discharge into the detention basin. All storm drains and the detention basin would be designed to manage flows from a 100-year storm event, in compliance with the San Diego Watershed Protection Ordinance requirement. The detention basin would be approximately eleven feet deep and cover 0.5 acres at the site. The proposed detention basin is intended to reduce the project's post-development runoff to a rate that would not exceed pre-project peak runoff/discharge rate, and therefore not increase flood risks downstream from the project site.

Once operational, the OGP facility would also be subject to NPDES industrial storm water permit and site management requirements. Therefore, staff recommends the adoption of Condition of Certification **SOIL & WATER-7**, requiring the project owner to comply with all requirements of the General NPDES Permit for Discharges of Storm Water Associated with Industrial Activity, including the development and implementation of an Industrial Facility SWPPP. Staff finds that compliance with the NPDES industrial storm water permit conditions, implementation of an approved DESCP for both construction and operation phases (per **SOIL & WATER-3**), and compliance with the San Diego County watershed protection ordinance requirements, including

requirements for design and sizing of detention basins and diversion canals (per **SOIL & WATER-5**) would ensure that any project operation-related storm water impacts are less than significant.

Water Resources and Supply

Recycled Water Use

The OGP proposes to use tertiary-treated recycled water for evaporative cooling of the CTG inlet air chiller system. Under maximum design conditions the total volume of recycled water to be used by the project would be 38.7 AFY. This assumes the facility operates both CTGs for 3,200 hours annually under summer conditions. However, the facility is expected to operate at less than half (23-46%) of the facility maximum annual capacity, probably only 2-8 hours per day on the days that the facility operates (OGE 2008a, page 2-7). Expected water use was therefore calculated based on requirements for two CTGs operating at summer conditions for a total of only 1,000 hours annually. Under expected use conditions, project recycled water use would be 12.1 AFY. (See **Soil and Water Table 4** for projected recycled water use volumes.) The project has an agreement with FPUD for the supply of no less than 45 AFY of recycled water for the project for approximately twenty-five years. (OGE 2008a, Appendix 6.5-G.1), which would be more than adequate for the project's chiller system evaporative cooling supply needs. [In addition, staff notes that the 45 AFY recycled water agreement could also provide a sufficient volume of recycled water to accommodate the 6.1 AFY of water needed to operate the turbine's SPRINT intercooling element under expected use conditions.]

Staff notes that use of recycled water by the project must also comply with all applicable provisions of the Health and Safety Code, and Titles 17 and 22 of the California Code of Regulations (CCR) pertaining to recycled water. These LORS include requirements for backflow prevention and cross connections of potable and non-potable water lines, recycled water piping and signage standards, and submittal of water supply and distribution system designs and an engineer's report on the use of recycled water by the project to the California Department of Public Health (CDPH). To ensure compliance with recycled water use LORS, staff proposes Condition of Certification **SOIL & WATER-8**, requiring compliance with the Title 17 and 22 CCR provisions for use of recycled water and submittal of designs and reports to both CDPH and the CPM.

Given the adequacy and availability of recycled water supplies, staff finds that use of recycled water by the project would not cause a significant adverse impact on water resources or water quality as long as proposed Condition of Certification **SOIL & WATER-8** is implemented.

Potable Water Use

The OGP proposes to use potable water for the facility demineralizer system (supplying demineralized water for turbine NOx, SPRINT injection, and water wash), as well as the non-turbine water requirements for fire protection water, sanitary system uses, and landscape watering. Under maximum design conditions the total volume of potable water to be used by project would be 62 AFY. As noted in the recycled water discussion above, this maximum case assumes full capacity facility operation. However, the facility

is expected to operate at less than half (23-46%) of the facility maximum annual capacity. Under expected use conditions, project potable water use would only be 21.1 AFY. (See **Soil and Water Table 3** for projected potable water use volumes.) The project has an agreement with FPUD for the supply of up to 62 AFY of potable water for approximately twenty-five years (OGE 2008c, Exhibit F). This volume of potable water would be more than adequate for the project's expected potable water needs. However, while the 21.1 AFY of potable water expected to be used by OGP is a reasonably small volume and would likely not create a significant adverse impact on water resources; staff has concerns about operation and management of the non-turbine potable water use facility elements in the event that potable water supplies are not available.

Staff notes that the project's potable water agreement with FPUD contains a clause that allows the FPUD to provide recycled water in lieu of potable water in the event of a drought, water supply shortage, or water emergency. Section No. 5 of the Potable Water Agreement Covenants is titled Drought, Water Supply Shortage, Water Emergency and Incremental Recycled Water Reservation and establishes the following condition:

> "In the event a drought, a water supply shortage or a water emergency [as determined by the District in its reasonable discretion] limits the District's ability to deliver potable water, the District may prohibit access to the potable water Point of Delivery. At any time that the District prohibits annexations to the District due to water supply concerns, the District will prohibit access to the potable water Point of Delivery. The District shall notify Orange Grove of any restrictions at least 24 hours in advance of their taking effect. For every day or partial day that the District restricts potable water access, Orange Grove shall receive an incremental increase in the reservation of tertiary treated recycled water under its Recycled Water Supply Agreement. The incremental increase in the reservation of tertiary treated recycled water shall be 62 acre-feet less the amount of potable water that has already been delivered in a calendar year."

On June 4, 2008, California Governor Schwarzenegger proclaimed a condition of statewide drought and encouraged local water districts to take actions to reduce water consumption locally. On July 2, 2008, the FPUD issued a press release notifying the Fallbrook community and FPUD customers that the district had updated its drought plan to have four levels of action (revised down from the six levels used in the previous plan) and reinforced that the district is currently in a level-one conservation alert, known as a "drought watch". At this drought plan level, the district is asking for a voluntary 10% cut back in water use by its customers and states that it will not consider any new annexations into the district's service area. Higher levels of the drought plan would require increasingly more rigorous water use restrictions and limitations.

Considering that the FPUD will not consider new annexations under the level-one drought plan status, and that under the potable water agreement OGP will not have access to potable water whenever the district prohibits annexations, staff believes that there is a reasonable possibility that, at some point during its operational life, the OGP will not have access to potable water and will instead have to use recycled water for all

project water needs, including the non-turbine potable water uses identified for fire protection, safety washes, sanitary uses, and irrigation, possibly for an extended period of time. Staff notes that FPUD has sufficient recycled water to replace all of the potable water needed for the OGP and has agreed to increase the project's recycled water reservation as necessary. The applicant has also stated that they can operate the facility on recycled water for a limited time (see Water Supply Backup section below). However, it is not clear whether or not the use of recycled water in lieu of potable water for the non-turbine potable water uses (i.e., fire protection water, safety showers and eye wash, sanitary system uses, and landscape watering) would be consistent with existing LORS under the existing project design parameters. Therefore, staff proposes Condition of Certification **SOIL & WATER-9** requiring the applicant to ensure that project use of recycled water in lieu of potable water for landscaping, fire protection, facility washdown, safety showers/eye wash, and sanitary systems will comply with all applicable LORS, and identify what operational changes would be necessary if recycled water is used in the raw water storage tank in the event of an interruption in potable water availability.

Implementation of **SOIL & WATER-9** would help ensure that all non-turbine potable water use systems are capable of operating with recycled water in compliance with LORS in the event that potable water supplies are interrupted and recycled water is used in lieu of potable water.

In addition, in considering total project operation water use, staff proposes Condition of Certification **SOIL & WATER-10**, requiring metering and reporting of project water use. This condition would track project water use, help ensure that project water use would not exceed volumes evaluated by the Energy Commission, and also help identify in advance potential water use concerns (such as water supply interruptions or facility equipment considerations) that may require evaluation and/or changes to project certification.

In conclusion, staff believes that with adoption and implementation of Conditions of Certification **SOIL & WATER- 8, 9, and 10**, as described above, project operation water use would have a less than significant impact on water resources and water quality.

Water Supply Back Up

As proposed, backup for the project's potable water supply would initially be provided by water stored onsite. If potable water deliveries were temporarily interrupted, the facility could still continue to operate at full load for approximately four (4) 12-hour operating days using water stored in the raw water and demineralized water storage tanks (assuming the tank are full and excluding water reserved for fire protection). In addition, water from the recycled water tank could be pumped into the raw water tank to provide an additional 39 hours of operation from the recycled water stored onsite. The project could then continue to operate on recycled water, if necessary, but only for a limited time (OGE 2008n). [As noted previously, if potable water from FPUD is not available for any reason, the project's potable water agreement allows FPUD to provide reclaimed water in lieu of potable water.]

If only the reclaimed water supply is temporarily interrupted and potable water deliveries are still available, water stored in the reclaimed water tank would allow for operation of

the chiller cooling towers at full load for five 12-hour operating days. In the event that the reclaimed water supply is not available at all (in response to plant upset or delivery disruption), the facility could still operate indefinitely at 87.5% of full load (approximately 84 MW) without using water for the inlet air chiller cooling element.

In the event that both potable and reclaimed water supplies are interrupted, onsite water storage would allow for 51 hours of facility operation under summer design conditions, assuming the water tanks are full (and excluding water reserved in the tanks for fire protection). At 60% tank capacity, the facility would still be able to operate at full load for 30 hours under summer design conditions. According to SDG&E experience, most peaking plants in the service area only run between 2 and 8 hours on days they operate. Therefore, the OGP could potentially operate without offsite water deliveries for between 4 and 15 days, assuming both onsite water tanks are at least 60% full. (OGE 2008a)

Staff believes that the backup water supply scenarios presented above would adequately address short-term interruptions in water deliveries and would have less than significant impact on water resources as long as proposed Condition of Certification **SOIL & WATER-9** is adopted to address potential replacement of potable water supplies with recycled water for non-turbine facility operation uses.

Wastewater

Project sanitary wastes/wastewater would be generated from domestic drains and two restrooms located in the facility's Service Building. A public sewer system is currently not available in the project area, so these wastes would be discharged to an onsite sanitary waste septic system comprised of a septic tank and leach field (OGE 2008a, Appendix 6.5-H). The onsite septic system would be sized to accommodate six employees and would be designed in accordance with San Diego County Onsite Wastewater Treatment System (OWTS) Ordinance requirements (OGE 2008a, Appendix 6.5-H). The county OWTS requirements address system sizing, design, and layout according to site characteristics, and include provisions for inspection of the system prior to backfilling. To ensure that all project septic system elements are constructed and operated in compliance with the San Diego County OWTS Ordinance, staff propose Condition of Certification **SOIL & WATER-11** requiring the project owner to submit to the San Diego County Department of Environmental Health all documents, reports, and fees necessary for compliance with the county OWTS ordinance.

Plant process wastewater (such as blowdown from the chiller system and chiller coil condensate) would be collected and recycled onsite using an RO system. The clean water produced by the RO system (RO permeate) would be piped into the recycled water storage tank and the RO concentrate would be piped into the raw water storage tank. Without use of the RO system, the project would generate about 8.3 gpm or 133,000 gallons per month of process wastewater. Use of the RO system to recycle process wastewater would reduce facility wastewater generation to only about 320 gallons per month of oily wastewater from drains in the turbine and gas compressor areas and service building floor. This wastewater would be collected, temporarily stored onsite, and then transported offsite for appropriate treatment, reuse and/or disposal. To ensure proper management, transport and disposal of the oily wastewater, staff proposes Condition of Certification **SOIL & WATER-12** requiring the project owner to

properly classify the wastewater to determine proper management and disposal requirements and provide documentation that the wastewater was transported and disposed in compliance with all applicable LORS.

With implementation of Conditions of Certification **SOIL & WATER-11** and **12**, staff concludes that the generation, management and disposal of OGP operation wastewaters would have a less than significant impact on the environment.

CUMULATIVE IMPACTS

A project may result in a significant adverse cumulative impact where its effects are cumulatively considerable. “Cumulatively considerable” means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects [CCR 2008, §15065(A)(3)]. Cumulative impacts can result from actions taking place over time in the same area that are minor when taken individually, but are collectively significant. In addition to the proposed OGP, the most closely related existing or planned projects in the area are the Gregory Canyon Landfill expansion and Rosemary’s Mountain Quarry. The landfill expansion will use reclaimed water obtained from the Olivenhain Municipal Water District and ground water pumped onsite. The quarry project will also use ground water. Because of the OGP will not use groundwater and will obtain its recycled water from the FPUD, no water resource cumulative impacts are anticipated from OGP construction and operation.

Construction and operation of the proposed OGP would result in both temporary and permanent changes at the project site. These changes could incrementally increase local soil erosion and storm water runoff. However, potential project-related soil or storm water impacts would be reduced to a level of insignificance through implementation of the applicant’s proposed mitigation measures/BMPs and project DESCP; implementation of the SWPPPs for the Construction and Industrial Activities NPDES permits; and compliance with all applicable erosion and storm water management LORS. The supply of recycled water from FPUD is sufficient to meet the needs of the OGP and other existing or potential users. In addition, the existing potable water supply would be adequate to meet both the potable water needs of the OGP and other uses in the area. As noted above, if necessary, FPUD will replace project potable water supplies with reclaimed water in the event of potable water shortages.

Therefore, staff finds that construction and operation of the OGP would not result in cumulative impact to soil and water resources.

COMPLIANCE WITH LORS

The Energy Commission’s power plant certification process requires staff to review each of the proposed project’s elements for compliance with LORS and policies. Staff has reviewed the project elements and concludes that the proposed OGP would comply with all applicable LORS addressing protection of water resources, storm water management, and erosion control, as well as drinking water and wastewater discharge

requirements, as long as staff's proposed conditions of certification are adopted and implemented. Summary discussions of project compliance with significant LORS and policies are provided below.

CLEAN WATER ACT

Staff has determined that the OGP would satisfy the requirements of the Clean Water Act with the implementation of Conditions of Certification **SOIL & WATER-2** and **7**, which require compliance with the requirements of the NPDES permits and the development and implementation of a SWPPP for both construction and industrial activities.

PORTER-COLOGNE WATER QUALITY CONTROL ACT

Staff has concluded that the OGP would satisfy the applicable requirements of the Porter-Cologne Water Quality Control Act and adequately protect the beneficial uses of waters of the state through all of the following: implementation of federal, state, and local requirements for management of storm water discharges and pollution prevention; adherence with state recycled water use requirements; compliance with local grading and erosion control requirements; and compliance with local onsite wastewater treatment system (septic system) requirements.

SWRCB POLICY 75-58 AND ENERGY COMMISSION—*INTEGRATED ENERGY POLICY REPORT (IEPR)*-POWER PLANT WATER USE AND WASTEWATER DISCHARGE POLICY

SWRCB Policy 75-58 states that fresh inland waters should only be used for power plant cooling if other sources or other methods of cooling would be environmentally undesirable or economically unsound. In accordance with the water conservation provisions established in the California State Constitution and SWRCB Resolution 75-58, the Energy Commission established a water source and use policy in its *2003 Integrated Energy Policy Report (IEPR)*, stating that "the Energy Commission will approve the use of fresh water for cooling purposes by power plants which it licenses only where alternative water supply sources and alternative cooling technologies are shown to be 'environmentally undesirable' or 'economically unsound.'"

The OGP proposes to use recycled water for the project's cooling tower evaporative cooling needs. While the cooling tower recycled water use is fully consistent with the Energy Commission water policy, the project also proposes to use approximately 6 to 18 AFY of potable water for CTG water spray intercooling (SPRINT) that is integrated into the GE LM6000PC SPRINT generator. Staff considers the SPRINT technology water use to be cooling because it uses water to cool the temperature of the generator compressor to increase output of the unit during warm or hot weather. In this case, in addition to cooled inlet air, water is also used to lower the temperature in the engine's compressor to increase the efficiency of generator operation.

However, given the project's proposed use of recycled water for the major portion of its cooling water needs and the relatively small volume of potable water to be used for SPRINT intercooling, staff would consider the project to be substantially in compliance with the intent of the Energy Commission water use policy with project implementation of facility-specific water conservation measures and development and implementation of

a regional water conservation program that would conserve a volume of potable water equivalent to the volume used by the project for SPRINT intercooling. Staff, therefore, recommends adoption of Condition of Certification **SOIL & WATER-13** requiring the project to: 1) implement water conservation measures to the extent practicable for all facility operation water uses in compliance with applicable FPUD water conservation programs and requirements; and 2) participate as a partner in an appropriate San Diego County Water Authority (SDCWA) water conservation program (such as the High-Efficiency Clothes Washer Incentive Program or the CII Voucher Program) and provide funding to the program in an amount sufficient to support conservation of a volume of potable water equivalent to the volume of potable water annually used for project SPRINT intercooling.

In addition, the Energy Commission's water policy also seeks to protect water resources from power plant wastewater discharges. To that end, the water policy specifies that the Energy Commission will require zero liquid discharge technologies [for management of power plant wastewaters] unless such technologies are shown to be 'environmentally undesirable' or 'economically unsound.' The OGP proposes to use an RO system to recycle process wastewater for reuse onsite. This treatment and reuse of the process wastewaters onsite will eliminate more than 99% of the facility's industrial wastewater, leaving only a little over 300 gallons of wastewater that would require offsite disposal. Therefore, staff finds that the proposed RO treatment and reuse onsite of facility process wastewaters would be substantially in compliance with the intent of the water policy because it eliminates the major portion of process wastewater discharge from the facility.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

Comments related to water use and water quality impacts associated with the proposed Orange Grove project were received from the San Diego RWQCB (SDRWQCB 2008a) and the Rainbow Municipal Water District (RMWD 2008a). Summaries of the comments and staff responses to comments are provided below.

SAN DIEGO RWQCB

The San Diego RWQCB reviewed the project AFC for impacts to surface water quality and made the following comments and suggestions.

Comment #1: Permits
It was noted that the project may require permits from the RWQCB if the project discharges wastes or storm water.

Response #1: While a CWA section 401 certification or WDRs would not be required for project activities (see the Construction Impacts – Surface Waters and Hydrology section of this assessment for more information), enrollment under the General NPDES Storm Water Permits for Construction and Industrial Activities would be required by Conditions of Certification **SOIL & WATER-2 and 7**. In addition, since the project will not discharge non-storm water wastewater into waters of the United States, a site-specific NPDES permit would not be required.

Comment #2: Project Design
The RWQCB suggested incorporation of the following design features:

- Runoff from parking lots, roof, or other impervious surfaces should be directed to the immediate landscape or directed to retention basins, etc, prior to entering the storm drain;
- Landscaping that requires little or no irrigation should be used and landscaping should be recessed to create retention basins/areas to capture runoff;
- The amount of area covered by impervious surfaces should be reduced through use of permeable pavement or other pervious surfaces; and
- Natural drainages and pre-project hydrograph for the area should be maintained.

Response #2: Features consistent with the RWQCB comments have been incorporated into the design of the OGP. Please see the Operation Impacts section of this assessment and the project AFC for more information.

Comment #3: SUSMP Requirements
The project should comply with the local Standard Urban Storm Water Mitigation Plan (SUSMP) and other requirements of the Municipal Storm Water Permit (R9-2007-001).

Response #3: Proposed Condition of Certification **SOIL & WATER-5** specifically requires project compliance with the San Diego County Watershed Protection Ordinance, which includes requirements consistent with the provisions of the SUSMP and Municipal Storm Water Permit.

Comment #4: Construction Requirements

A. The project AFC should list sediment and erosion control BMPs to be used during construction and confirm that these BMPs will be implemented.

B. The project must be enrolled under the SWRCB General NPDES construction storm water permit.

C. The project AFC should confirm that the SWPPP required by the SWRCB construction storm water permit will be developed and implemented during construction.

D. The project AFC should include a frac-out contingency plan for the proposed horizontal directional drilling.

Response #4: The project AFC includes a list of proposed BMPs in the draft DESCP submitted in response to Data Request #57 (TRC 2008e) and also includes a draft frac-out plan as an attachment to the Streambed Alteration Agreement (TRC 2008i). In addition, proposed Conditions of Certification **SOIL & WATER-2 and 3** require both project enrollment under the General NPDES Construction Storm Water Permit and development and implementation of the construction SWPPP and a DESCP addressing BMPs.

Comment #5: Water Course Alterations

A. A CWA section 401 certification is also required by an applicant for a federal license or permit to conduct activities that may result in discharge into a water of the United States.

B. If water courses are to be altered in any way, the project must perform a wetland delineation in accordance with the USACE requirements and obtain a Jurisdictional Determination from the USACE.

C. For projects that propose alterations or impacts to non-federal waters of the state, the discharger should apply for individual or general WDRs, or a WDR waiver, from the SDRWQCB.

D. The project should avoid all impacts to water courses, minimize impacts that cannot be avoided, and mitigate for any remaining impacts in accordance with the State's "No-Net-Loss" wetlands conservation policy (Executive Order W-59-93).

Response #5: See Response #1 above and the Construction Impacts – Surface Waters and Hydrology section of this assessment for a discussion and information addressing these comments.

Comment #6: Discharges to Impaired Water Bodies
If the project is tributary to a CWA section 303(d)-listed impaired water body, the project should implement BMPs to ensure compliance with the impaired water body's total maximum daily load for identified pollutants.

Response #6: Project storm water would be tributary to the San Luis Rey River, which is listed as a CWA section 303(d) impaired water body for chloride and TDS. Total maximum daily loads (TMDLs) for chloride and TDS for the river have not yet been established. However, the project will implement BMPs in accordance with all applicable storm water discharge requirements for the project area.

RAINBOW MUNICIPAL WATER DISTRICT (RMWD)

Comment: RMWD stated that staff from the proposed project has been working with RMWD for approximately one year to try and secure a permanent water supply for the power plant; however, the plant is located in a remote area that is several miles from the closest RMWD water main. They considered alternative ways to supply water to the project, including trucking, but the RMWD regulations prohibit the permanent use of water on a parcel other than where the water is purchased. The RMWD says that Orange Grove staff has assured them that they still desire a permanent water connection to the facility. Therefore, RMWD holds a neutral position to the water purchase agreements between FPUD and Orange Grove Energy if they are considered an interim arrangement. However, if the water trucking is to be considered a permanent plan, then RMWD is opposed to the water agreements because RWMD considers them contrary to the RWMD rules and regulations and counter to the rights of the residents in the District to have a voice in the decision-making process. RWMD suggests that the Energy Commission consider the proposal to truck water with the stipulation that

trucking only be allowed for a short-term, preferably three years or less, in order to allow Orange Grove Energy adequate time to design and construct a water line [for RWMD service] to the project.

Response: Energy Commission staff acknowledges the efforts of both the applicant and the RMWD to identify a viable and economical way for the project to permanently connect to a RMWD potable water supply line. Unfortunately, the environmental, economic, and land use/right-of-way elements needed to evaluate a potential potable water connection in the short-term are not available for consideration at this time. However, staff supports continued discussions between the applicant and RMWD to address this issue. Staff also recommends that, if the OGP is certified, the applicant should submit a request to amend the project to allow a change in the source of potable water if and when a viable plan for project connection to RMWD potable water service is identified.

CONCLUSIONS

Construction and operation of the proposed OGP would result in both temporary and permanent impacts to soil and water resources in the area. However, potentially significant impacts would be avoided or mitigated to a less than significant level through the implementation of various erosion and storm water control plans during construction and operation of the project, as well as compliance with applicable LORS and conditions of certification for activities that could otherwise cause soil erosion, contamination of surface or ground water, or impacts to water supplies.

- Potential adverse impacts caused by soil erosion and storm water flows during construction and operation of the OGP would be mitigated by implementation of BMPs in accordance with the required federal Construction and Industrial Activity SWPPPs; the county SWMP; and the DESCP, as proposed in Conditions of Certification **SOIL & WATER-2, 3, 5 and 7**.
- The main project facility would be constructed outside the designated 100-year floodplain and would not exacerbate flood conditions in the vicinity of the project. In addition, while sections of the gas pipeline would be located within the 100-year floodplain, the underground gas pipeline and associated metering station would not impede or redirect flood flows or exacerbate flood conditions in the area.
- The OGP's proposed water use would not result in significant adverse impacts on water resources and water quality with adoption of staff's proposed Conditions of Certification **SOIL & WATER-6, 8, 9, 10, and 13**.
- Potential impacts to surface or groundwater quality from industrial or sanitary wastewaters generated by the OGP would be mitigated to a less than significant level through reuse onsite of industrial process wastewaters, proper management and disposal of oily wastewaters not suitable for reuse, and compliance with established septic system construction and use requirements.
- The proposed project would comply with applicable federal, state, and local laws, ordinances, regulations, and standards with adoption and implementation of staff's proposed conditions of certification.

- The OGP would not result in any unmitigated cumulatively significant adverse impacts to soil or water resources with adoption of staff's proposed conditions of certification.

PROPOSED CONDITIONS OF CERTIFICATION

At this time staff recommends adoption and implementation of the following conditions of certification.

SOIL & WATER-1: Prior to the start of project site mobilization and construction, the project owner shall submit documentation confirming that 1) all elements of the San Diego Gas and Electric Company (SDG&E) storage area septic system have been identified and clearly located; 2) that the storage area septic tank has been properly abandoned by SDG&E if it will no longer be used; and 3) that all areas overlying the storage area septic system are flagged and blocked off where construction activities may present safety issues or damage septic system elements. Project construction shall not proceed until the required septic system documentation is provided and the Compliance Project Manager (CPM) gives approval to start construction.

Verification: Not later than 10 days prior to the start of site construction, the project owner shall submit to the CPM all of the following: 1) maps and diagrams clearly showing the location of the SDG&E storage area septic system; 2) documentation from SDG&E that the storage area septic system has been properly abandoned in accordance with county requirements if SDG&E no longer plans to use the system; and 3) pictures and diagrams clearly showing the areas to be flagged and blocked off from construction activities for safety reasons or to prevent damage to septic system elements. Project construction shall not proceed until the required septic system documentation is provided and the CPM gives approval to start construction.

SOIL & WATER-2: The project owner shall comply with the requirements of the general National Pollutant Discharge Elimination System (NPDES) permit for discharge of storm water associated with construction activity. The project owner shall submit copies of all correspondence between the project owner and the State Water Resources Control Board (SWRCB) or the San Diego Regional Water Quality Control Board (RWQCB) regarding this permit to the CPM. The project owner shall also develop and implement a construction Storm Water Pollution Prevention Plan (SWPPP) for construction on the main Orange Grove Project (OGP) site and all laydown areas.

Verification: The project owner shall submit a copy of the construction SWPPP to the CPM at least 10 days prior to site mobilization for review and approval, and retain a copy of the approved SWPPP on site throughout construction. The project owner shall submit copies of all correspondence between the project owner and the SWRCB or the San Diego RWQCB regarding the NPDES permit for the discharge of storm water associated with construction activity to the CPM within 10 days of its receipt or submittal. Copies of correspondence shall include the Notice of Intent sent to the SWRCB, the confirmation letter indicating receipt and acceptance of the Notice of Intent, any permit modifications or changes, and completion/permit Notice of Termination.

SOIL & WATER-3: Prior to the start of site mobilization activities for project construction, the project owner shall obtain CPM approval for a site-specific Drainage, Erosion, and Sediment Control Plan (DESCP). The DESCP must ensure proper protection of water quality and soil resources; demonstrate no increase in off-site flooding potential; include provisions for sediment and storm water retention as necessary to meet San Diego County and RWCQB requirements; and identify all appropriate monitoring and maintenance activities. The DESCP shall contain elements 1 through 9 below, outlining site management activities and erosion- and sediment-control Best Management Practices (BMPs) to be implemented during site mobilization, excavation, construction, and post-construction (operating) activities.

1. Vicinity Map – A map(s) at a minimum scale 1”=100’ shall be provided and shall indicate the location of all project elements (construction site, laydown area, pipelines) with depictions of all significant geographic features including storm drains and sensitive areas.

2. Site Delineation – All areas subject to soil disturbance for the OGP (project site, laydown areas, linear facilities, landscaping areas, and any other project elements) shall be delineated showing boundary lines of all construction areas and the location of all existing and proposed structures, pipelines, roads, and drainage facilities.

3. Watercourses and Critical Areas Map – The DESCP shall show the location of all nearby watercourses including intermittent drainages and drainage ditches. It shall indicate the proximity of those features to the main OGP site and construction laydown areas, and proposed landscape areas.

4. Drainage Map – The DESCP shall provide a topographic site map(s) at a minimum scale 1”=100’ showing existing, interim, and proposed drainage swales and drainage systems and drainage-area boundaries. On the map, spot elevations are required where relatively flat conditions exist. The spot elevations and contours shall be extended off-site for a minimum distance of 100 feet.

5. Drainage of Project Site Narrative – The DESCP shall include a narrative of the drainage measures, including BMPs, that would be used to protect the site and downstream facilities. The narrative shall include the summary pages from the hydraulic analysis prepared by a professional engineer and erosion control specialist. The narrative shall state in acres the watershed size(s) that was used in the calculation of drainage features. The hydraulic analysis shall be used to support the selection of BMPs and structural controls to divert off-site and on-site drainage around or through the OGP site, and laydown area(s).

6. Clearing and Grading Graphics/Plans – The DESCP shall provide a delineation of all areas to be cleared of vegetation as well as areas where existing vegetation will be retained. The plan shall provide elevations, slopes, locations, and extent of all proposed grading as shown by

contours, cross sections, or other means. The locations of any disposal areas, fills, or other special features shall also be shown. Existing and proposed topography shall be illustrated tying in proposed contours with existing topography.

7. Clearing and Grading Narrative – The DESCP shall include a table indicating the quantities of material to be excavated or filled on the OGP facility site and all off-site locations (laydown areas, transmission and pipeline corridors, roadways, and bridges) whether such excavation or fill is temporary or permanent; and the amount of material, if any, to be imported or exported. Identify the location of disposal or source for cut or fill material if quantities would not be balanced on-site.

8. Best Management Practices Plot Map – The DESCP shall identify the location of the site-specific BMPs to be employed during each phase of construction (initial grading, project element excavation and construction, and final grading/stabilization) on the topographic site map(s). BMPs shall include measures designed to prevent wind and water erosion.

9. Best Management Practices Narrative – The DESCP shall describe the location, timing, and maintenance schedule of all erosion- and sediment-control BMPs to be used prior to initial grading and during all project element excavations and construction, final grading/stabilization, and post-construction. Separate BMP implementation schedules shall be provided for each project element for each phase of construction. The maintenance schedule shall also include a draft post-construction maintenance schedule for structural-control BMPs, with a final post-construction schedule for structural-control BMPs provided to the CPM prior to the start of operations.

Verification: At least 90 days prior to start of site mobilization for project construction activities, the project owner shall submit a copy of the DESCP to the county of San Diego and the San Diego RWQCB for review and comment. At least 60 days prior to start of site mobilization, the project owner shall submit the DESCP, along with any comments received from the county and the San Diego RWQCB, to the CPM for review and approval. The CPM shall consider all comments by the county and RWQCB prior to approving the DESCP. The DESCP shall be consistent with the grading and drainage plan as required by Condition of Certification **CIVIL-1**, and relevant portions of the DESCP shall clearly show approval by the chief building official. The project owner shall provide a narrative on the effectiveness of the drainage, erosion, and sediment-control measures and the results of monitoring and maintenance activities in the monthly compliance report. Once operational, the project owner shall update and maintain the DESCP for the life of the project and shall provide information on the results of monitoring and maintenance activities in the annual compliance report and updates on compliance with the San Diego County Watershed Protection Ordinance as required by **SOIL & WATER-5** and the Industrial NPDES storm water permit as required by **SOIL & WATER-7**. The DESCP may be jointly developed with the SWPPPs required for compliance with NPDES storm water management permit requirements, but must be clearly identified as the project DESCP and contain all elements as specified in this condition.

SOIL & WATER-4: Prior to site mobilization and construction, the project owner shall submit a grading packet to the county of San Diego containing all documentation, plans, and fees normally required for the county's grading permit, with copies to the CPM. Project mobilization and construction shall not proceed until the county of San Diego issues an approval document, equivalent to the county's grading permit, and the CPM provides written concurrence.

Verification: At least 90 days prior to the start of site mobilization, the project owner shall submit a grading packet to the San Diego County Department of Public Works containing all documentation, plans, and fees normally required for the county's grading permit. Copies of all documents and information submitted by the project owner to the city, and any correspondence and permitting document(s) or approvals received by the project owner, shall be provided to the CPM within 10 days of submittal or receipt by the project owner. All grading plan and permit equivalent requirements or recommendations shall be consistent with the project DESCP and the SWPPPs developed in compliance with the project conditions of certification and NPDES permits for construction and industrial activities. Project mobilization and construction shall not proceed until the required San Diego County grading permit equivalent document is issued by the county and the CPM provides written concurrence.

SOIL & WATER-5: The project owner shall comply with all applicable requirements of the San Diego County Watershed Protection, Storm Water Management and Discharge Control Ordinance, including development, submittal, and implementation of a Storm Water Management Plan (SWMP), as necessary. The project owner shall provide a copy of the required SWMP to the CPM and notify the CPM in writing of any reported non-compliance with the county requirements, including documentation of any measures taken to correct the non-compliance and the results of those corrective measures.

Verification: At least 60 days prior to the start of project construction, the project owner shall submit evidence of compliance with the San Diego County storm water management requirements to the CPM, including development, submittal, and implementation of a SWMP as necessary. A copy of the SWMP, and any plan updates, shall be provided to the CPM within 10 days of submittal of the plan or plan updates to San Diego County. The CPM shall be notified by the project owner, in writing, of any reported non-compliance with the county requirements within 10 days of the event. The written notification shall include documentation of any measures taken to correct the non-compliance and the results of those corrective measures. The project owner shall submit copies of all correspondence between the project owner and the county regarding the SWMP to the CPM within 10 days of receipt or submittal.

SOIL & WATER-6: The project owner shall identify the source(s), volumes, and provider(s) of water used for all aspects of project construction activities (except water used for drinking water purposes). The information submitted for each water provider and source of water shall document that the water source(s) and means of procurement are consistent with all applicable water supply and water use LORS. The required documentation shall include copies

of water agreements and verification that water providers and haulers are licensed or otherwise authorized to supply the water to be used for project construction purposes.

Verification: At least 30 days prior to the start of project construction, the project owner shall provide to the CPM an initial list of water providers and sources of water to be used for project construction activities, along with documentation that the volumes, sources, and methods of water procurement are consistent with all applicable water supply and water use LORS. The required documentation shall also include copies of water agreements and verification that the water providers and haulers used are licensed or otherwise authorized to supply the water to be used for project construction purposes. The project owner shall update this list monthly as necessary and submit the updates with the project monthly compliance reports.

SOIL & WATER-7: The project owner shall comply with the requirements of the General NPDES Permit for Discharges of Storm Water Associated with Industrial Activity, including development of an Industrial Facility SWPPP.

Verification: The project owner shall submit a copy of the Industrial Facility SWPPP for operation of the OGP to the CPM at least 60 days prior to the start of commercial operation and shall retain a copy of the approved SWPPP on site throughout the life of the project. The project owner shall submit copies of all correspondence between the project owner and the San Diego RWQCB regarding the general NPDES permit for discharge of storm water associated with industrial activity to the CPM within 10 days of its receipt or submittal. Copies of correspondence shall include the Notice of Intent sent by the project owner to the SWRCB, the confirmation letter indicating receipt and acceptance of the Notice of Intent, and any permit modifications or changes.

SOIL & WATER-8: The OGP shall comply with all recycled water use requirements established in Title 22 and Title 17 of the California Code of Regulations (CCR) and any applicable local recycled water use ordinances. Prior to delivery of recycled water to the OGP for any purpose, the project owner shall submit a Title 22 Engineer's Report, along with copies of any review comments on the report from the California Department of Public Health (CDPH) and the San Diego RWQCB, for review and approval by the CPM.

Verification: Not less than 30 days prior to beginning any site mobilization activities, the project owner shall submit to the CPM a water supply and distribution system design, an Engineer's Report for the Production, Distribution and Use of Recycled Water (Engineer's Report), and copies of any comments on the documents from CDPH and the San Diego RWQCB for review and approval by the CPM. The water supply and distribution system design shall also be included in the final project design drawings submitted to the CPM.

The Engineer's Report shall be prepared in accordance with Title 22 and Title 17 of the California Code of Regulations, the California Health and Safety Code, and the California Water Code. The project owner shall comply with any reporting and inspection requirements set forth by the CDPH and the San Diego RWQCB to fulfill statutory requirements. The project owner shall submit copies to the CPM of all correspondence between the project owner and CDPH or the San Diego RQWCB regarding project use of recycled water within 10 days of receipt or submittal.

SOIL & WATER-9: Prior to the start of project construction, the project owner shall ensure that project use of recycled water in lieu of potable water for landscaping, fire protection, facility washdown, safety showers/eye wash, sanitary systems, and any other non-turbine water uses will comply with all applicable LORS, and identify what operational changes would be necessary if recycled water is used in the raw water storage tank during interruptions of potable water supplies.

Verification: At least 30 days prior to the start of project operation, the project owner shall submit to the CPM documentation identifying which of the five elements listed above could use recycled water in lieu of potable water without changes to project systems. For those elements that cannot use recycled water without changes to project systems or project operations, the project owner shall submit a plan to the CPM detailing how project system configurations or operations will be changed to accommodate recycled water use in the raw water storage tank, or how the project owner will provide adequate potable quality water during short-term potable water interruptions. The CPM shall review and approve the plan and the project owner shall implement the plan during short-term use of recycled water in the raw water storage tank.

SOIL & WATER-10: The project owner shall obtain project water supplies from FPUD in volumes not to exceed 62 AFY of potable water and 38.7 AFY of recycled water, unless other use volumes are approved by the CPM. Prior to the use of potable and recycled water for commercial operation, the project owner shall install and maintain metering devices, as part of the project water supply and distribution system, to monitor and record in gallons per day the total volumes of potable and recycled water supplied to the OGP by the FPUD. The metering devices shall be operational for the life of the project and must be able to record the volumes of water used from each type of water separately.

Verification: At least 60 days prior to commercial operation of the OGP, the project owner shall submit documentation to the CPM that metering devices for both the potable water supply system and the recycled water supply system have been installed and are operational. The project owner shall prepare an annual potable water and recycled water use summary giving the monthly range and monthly average of daily potable water usage and recycled water usage in gallons per day and total potable water and total recycled water used on a monthly and annual basis in acre-feet. The annual summary shall be included in the Annual Compliance Report. For years subsequent to the initial year of operation, the annual summary will also include the yearly range and yearly average for potable water used and recycled water used. For calculating the total water use, the term *year* will correspond to the date established for the annual compliance report submittal. If the amount of potable water and/or recycled water to be used by OGP is expected to exceed 62 and 38.7 AFY respectively, during any annual reporting period, the project owner shall provide a written request and explanation for the anticipated water use increase to the CPM at least 60 days prior to the date when the water use limit is expected to be exceeded.

SOIL & WATER-11: Prior to the start of project construction, the project owner shall comply with all San Diego County Onsite Wastewater Treatment System (OWTS) Ordinance requirements for construction and operation of the

project's sanitary waste septic system and leach field. Project construction shall not proceed until documentation equivalent to the county's required onsite wastewater treatment system permit is issued by the county and approved by the CPM. The project owner shall remain in compliance with the county OWTS requirements for the life of the project.

Verification: At least 90 days prior to the start of project construction, the project owner shall submit a sanitary waste management information packet to the San Diego County Department of Environmental Health containing all necessary documentation, plans, and fees required for the county's onsite wastewater treatment system (septic system) construction and operation permits and authorizations. Copies of all documents and information submitted by the project owner to the county, and any documentation equivalent to the county's septic system permit issued to the project owner shall be provided to the CPM within 10 days of submittal or receipt by the project owner. Project mobilization and construction shall not proceed until the required septic system permit equivalent document is issued by the county and the CPM provides written concurrence. The project owner shall remain in compliance with the county OWTS requirements for the life of the project and provide a status report on OWTS compliance in each annual compliance report.

SOIL & WATER-12: Prior to transport and disposal of any facility operation wastewaters that are not suitable for treatment and reuse onsite, the project owner shall test and classify the stored wastewater to determine proper management and disposal requirements. The project manager shall ensure that the wastewater is transported and disposed of in accordance with the wastewater's characteristics and classification and all applicable LORS (including any CCR Title 22 Hazardous Waste and Title 23 Waste Discharges to Land requirements).

Verification: Prior to initial offsite transport and disposal of facility wastewaters, the project owner shall test and classify the stored wastewater to determine proper management and disposal requirements. At least 10 days prior to offsite transport, the project manager shall submit to the CPM for review and approval a report documenting the results of the wastewater testing and classification, and identifying the volume of wastewater to be disposed, the methods of transport, and the disposal facility to be used for offsite disposal of the wastewater. After CPM approval of the initial testing and management report, and absent changes in wastestream characteristics or in the transport and disposal practices identified, the project owner shall report annually in the Annual Compliance Report the volume of facility wastewater transported and disposed of offsite and provide documentation that the wastewater was transported and disposed of in compliance with all applicable LORS.

SOIL & WATER-13: The project owner shall: 1) submit a facility water conservation plan to the CPM for review and approval; 2) implement water conservation measures to the extent practicable for all facility operation water uses in compliance with applicable FPUD water conservation programs and requirements; and 3) participate as a partner in an appropriate San Diego County Water Authority (SDCWA) water conservation program (such as the High-Efficiency Clothes Washer Incentive Program or the CII Voucher Program) and provide funding to the program in an amount sufficient to

support conservation of a volume of potable water equivalent to the volume of potable water annually used for project SPRINT intercooling.

Verification: At least 30 days prior to the start of facility operation, the project owner shall do all of the following:

1. Submit to the CPM a facility water conservation plan addressing all facility operation water uses. The plan shall identify all water conservation measures to be implemented by the facility, including a schedule for implementation and maintenance of the measures and a narrative description of how the project will modify measures as necessary to accommodate local water conditions. After review and approval by the CPM, the project owner shall implement the water conservation plan for the life of the project. The project owner shall report annually on the status of facility conservation, revise the conservation plan as necessary to address local conditions, and submit plan revisions to the CPM for review and approval.

2. Submit to the CPM for review and approval a plan identifying an appropriate SDCWA water conservation project and how the project owner will participate in and fund the program as necessary to annually conserve a volume of potable water equivalent to the facility's potable water use for SPRINT intercooling. The plan shall clearly document how the project will achieve and document the desired goal of annually conserving a volume of potable water equivalent to the facility's SPRINT potable water consumption. Upon CPM approval, the project owner shall implement the required water conservation project plan.

REFERENCES

CCR 2008. California Environmental Quality Act (CEQA) Guidelines. Title 14, California Code of Regulations, section 15000 and the following (Cal. Code Regs., tit. 14, §15000 et seq.).

CEC 2008k – CEC/F. Miller (tn: 47449) Data Requests 1-73, Set #1 dated 8/5/08. Submitted to Dockets 8/5/08.

CEC 2008n – CEC/F.Miller (tn: 48502) Report of Conversation dated 10/8/08 with F. Miller/J. Babula and J. Stenger and M. Jones to discuss project engineering. Submitted to Dockets 10/9/08.

CEC 2008q – CEC/C.Closson (tn: 48705) Report of Conversation dated 10/3/08 with C. Closson/M.Porter to permits for horizontal directional drilling. Submitted to Dockets 10/22/08.

DFG 2008a – E. Pert to F. Miller (tn: 48020) DFG comments on AFC dated 9/17/08. Submitted to Dockets 9/18/08.

DTSC 2008A – A. Shami (tn: 47892) DTSC response to OG AFC dated 8/27/08. Submitted to Dockets 9/3/08.

OGE 2008a – OGE/S. Thome (tn: 46770) Application for Certification Orange Grove Energy dated 6/19/08. Submitted to Dockets 6/19/08.

OGE 2008c – OGE/S. Thome (tn: 46979) Supplement to AFC dated 7/8/08. Submitted to Dockets 7/8/08.

OGE 2008d – OGE/E. Back (tn: 47644) Email from E. Back to CEC regarding L. Monarres/US COE no permit required from Corp for Section 404 waters. Submitted to Dockets 8/20/08.

RMWD 2008a – Rainbow Municipal Water District/D. Seymour (tn: 47916), Comments on Orange Grove project water use and provision of water, August 27, 2008.

RMWD 2008b – Rainbow Municipal Water District/B. Lee (tn: xxxxx), E-mail regarding RMWD provision of water for Orange Grove project construction use, September 25, 2008.

SDRWQCB 2008a – California Regional Water Quality Control Board, San Diego Region/C. Clemente (tn: 47915), Comments on Application for Certification for the Orange Grove Power Plant project, August 26, 2008.

TRC 2008a – J. Stenger (tn: 46882) Project design drawings previously submitted at a reduced scale – Appendix 2-A dated 6/26/08. Submitted to Dockets 6/26/08.

TRC 2008b – J. Stenger (tn: 46883) Phase I Environmental Site Assessment previously included in Appendix 6.14-A dated 6/26/08. Submitted to Dockets 6/26/08.

TRC 2008e – J. Stenger (tn: 47854) Data Responses 1-73 dated 8/29/08. Submitted to Dockets 8/29/08.

TRC 2008g – J. Stenger (tn: 47234) Email response to C. Closson regarding septic/water dated 9/27/08. Submitted to Dockets 9/29/08.

TRC 2008i – J. Stenger (tn: 47751) Section 1602 Streambed Alteration Agreement application submitted to the California Department of Fish and Game, dated 8/11/08.

ACRONYMS - SOIL AND WATER RESOURCES TABLE

AF	acre-feet
AFC	Application for Certification
AFY	acre-feet per year
BMPs	Best Management Practices
CCR	California Code of Regulations
CDPH	California Department of Public Health
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CO	carbon monoxide
CPM	Compliance Project Manager
CTG	combustion turbine generator
CWA	Clean Water Act
CWC	California Water Code
DESCP	Drainage, Erosion, and Sediment Control Plan
ESA	Environmental Site Assessment
FPUD	Fallbrook Public Utility District
GE	General Electric
gpm	gallon(s) per minute
HDD	horizontal directional drilling
IEPR	Integrated Energy Policy Report
LORS	laws, ordinances, regulations, and standards
mg/L	milligrams per liter
MW	megawatt
NOx	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
OGE	Orange Grove Energy
OGP	Orange Grove Project
OWTS	onsite wastewater treatment system
REC	Recognized Environmental Condition
RO	reverse osmosis
RUSLE	Revised Universal Soil Loss Equation
RWQCB	Regional Water Quality Control Board
SDCWA	San Diego County Water Authority
SDG&E	San Diego Gas and Electric Company
SPRINT	GE spray intercooling technology
SUSMP	Standard Urban Stormwater Mitigation Plan
SWMP	Storm Water Management Plan
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TDS	total dissolved solids
TMDL	Total Maximum Daily Load
U.S. ACE	United States Army Corp of Engineers
WDRs	Waste Discharge Requirements

TRAFFIC AND TRANSPORTATION

Testimony of James Adams

SUMMARY OF CONCLUSIONS

The Orange Grove Project (OGP) would be consistent with the Circulation Element in the San Diego County General Plan and all other applicable laws, ordinances, regulations, and standards (LORS). The project would not have a significant adverse impact on the local and regional road/highway network. During the construction and operation phases, local roadway and highway demand resulting from the daily movement of workers and materials would not increase beyond significance thresholds established by San Diego County. During the operational phase, the project would not adversely affect aviation operations associated with any airport flight traffic pattern or agricultural spraying operations.

INTRODUCTION

In the Traffic and Transportation analysis, staff addresses the extent to which the project may impact the transportation system in the local area. This analysis includes the identification of: (1) the roads and routings that are proposed to be used for construction and operation; (2) potential traffic-related problems associated with the use of those routes by construction workers and truck deliveries; (3) the anticipated encroachment upon public rights-of-way during the construction of the proposed project and associated facilities; (4) the frequency of trips and probable routes associated with the delivery of hazardous materials; and (5) the possible effect of project operations on local airport flight traffic.

In addition to assessing potential project related impacts, staff has reviewed the applicable LORS to determine compliance. The LORS that govern the project are listed below in **Traffic and Transportation Table 1**, followed by a discussion of the setting and potential impacts related to traffic operations and safety hazards resulting from the construction and operation of the OGP.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Traffic and Transportation Table 1
Laws, Ordinances, Regulations, and Standards

Applicable LORS	Description
Federal:	
Code of Federal Regulations (CFR) Title 14, Chapter 1, Part 77	Includes standards for determining obstructions in navigable airspace. Sets forth requirements for notice to the Federal Aviation Administration of certain proposed construction or alteration. Also, provides for aeronautical studies of obstructions to air navigation to determine their effect on the safe and efficient use of airspace.
Title 49, Subtitle B	Includes procedures and regulations pertaining to interstate and intrastate transport (includes hazardous materials program procedures), and provides safety measures for motor carriers and motor vehicles who operate on public highways.
State:	
California Vehicle Code, Division 2, Chapter. 2.5, Div. 6, Chap. 7, Div. 13, Chap. 5, Div. 14.1, Chap. 1 & 2, Div. 14.8, Div. 15	Includes regulations pertaining to licensing, size, weight and load of vehicles operated on highways, safe operation of vehicles, and the transportation of hazardous materials.
California Streets and Highway Code, Division 1 & 2, Chapter 3 & Chapter 5.5	Includes regulations for the care and protection of State and County highways, and provisions for the issuance of written permits.
Local:	
San Diego County General Plan – Circulation Element.	Objectives are to provide a guide for the provisions of a coordinated system of highway routes serving all sections of San Diego County, to help achieve efficiency and economy in this important field of public works, to facilitate the planning to meet and street and highway needs in subdivision and other land development programs and to inform the citizens of San Diego County of these plans.
Guidelines for Determining Significance- Traffic and Transportation- Public Facilities Element	New development shall provide needed roadway expansion and improvements on-site to meet demand created by development, and to maintain a Level of Service C on Circulation Element roads during peak traffic hours.

SETTING

The OGP site is located on State Route 76 (SR-76) about four miles east of Interstate 15 (I-15) in western San Diego County. The facility would be located adjacent to San Diego Gas and Electric (SDG&E's) Pala Substation and just north of the San Luis Rey River. **Traffic and Transportation Figure 1, Regional Transportation System** shows the region surrounding the project site. Transportation figures are located at the end of this analysis.

Plant construction and operation traffic would use the existing roadways, which would include I-15, SR-76 and Pala Del Norte Road. Access to the site would be via SR-76 and Pala Del Norte Road, a local/private road. The local roadways that could be affected by the OGP are shown in **Traffic and Transportation Figures 1 & 2, Regional and Local Transportation System.** The existing roads, highways, and transit modes in the area of the project are identified below.

EXISTING HIGHWAYS AND ROADS

I-15 is a north-south eight-lane freeway that connects the San Diego area with Riverside and San Bernardino counties to the north and ultimately crosses the California/Nevada border. Caltrans records show average daily traffic volume on I-15 in the project area is about 128,000 vehicles per day (Caltrans 2006). About 10% of the daily traffic involves truck movement. The corresponding volume for SR-76 is 13,400 with approximately 5% truck traffic (OGP 2008a, Table 6.11-2, pg. 6.11-6). SR-76 is a two-lane east/west road in the general project area. Bicycle travel is allowed for the entire length of SR-76 (Caltrans 2007, pg. 6.3), though there are no bike lanes near the project area. Pala Del Norte is not included in the list of County maintained roads (OGP 2008a, Table 6.11-1, pg. 6.11-4). Mission Road is a two-to-four lane north/south oriented road with about 24,000 to 18,000 vehicles per day depending on which road segment is analyzed. Ammunition Road is a two-to-three lane east/west oriented road with about 12,400 vehicles per day. Alturas Road is a two lane north/south oriented road with about 4,000 vehicles per day. East Mission Road is a two-lane east/west oriented road with about 20,500 vehicles per day (see **Traffic and Transportation Figure 1** and OGP 2008a, Table 6.11-6, pg. 6.11-8).

LEVEL OF SERVICE

"Level of Service" (LOS) is a qualitative measure describing operational conditions within a traffic stream. The LOS is a term used to describe and quantify the congestion level on a particular roadway or intersection, and generally describes these conditions in terms of such factors as speed, travel time, and delay. The Highway Capacity Manual[1] defines six levels of service for roadways or intersections ranging from LOS A representing the best operating conditions and LOS F the worst. **Traffic and Transportation Table 2** provides existing daily traffic volume and LOS are the major highways in the project area. As noted below, SR-76 has a considerable amount of traffic west of Old Highway 395 (LOS E during peak periods) but is LOS A east of I-15 (OGP 2008a, Table 6.11-3). Pala Del Norte is operating at LOS A with limited traffic. Mission, Ammunition, Alturas and East Mission Roads are currently LOS A or B.

AIRPORTS

The only airport in the general area is Fallbrook Community Airpark which is about eight miles west of the OGP site. The project site is not in the landing or take-off pattern of this aviation facility or any other airport. There are no agricultural airstrips in the project area.

[1] National Research Council, Highway Capacity Manual, Third Edition, 2000.

Traffic and Transportation Table 2
Roadway Segment Average Daily Traffic Volume and LOS

Roadway Segment	Volume	LOS
I-15 at SR-76	128,000	Northbound A/D (A.M./ P.M.) Southbound D/A (A.M./ P.M.)
SR-76 (east of I-15)	9,439	West of Old SR-395 E/E East of I-15 A

Source: OGP 2008a, Table 6-.11-2, pg. 6.11-5

PUBLIC TRANSPORTATION

The Bonsall Union School District encompasses a large area including the communities of Bonsall and Pala. School bus service for elementary and middle school is provided and travels on SR-76. The applicant states that the construction workers arrival and departure (7 a.m. and 4 p.m.) would not overlap with the times the school buses would utilize the portion of SR-76 from I-15 to the project site. The bus stops are two or more miles west of the OGP site (OPG 2008a, pg. 6.11-18). Staff has been advised by the District that a school bus does use SR-76 to pick up students who live in the general area and near the community of Pala. There are two school bus stops near Rice Canyon Road (see **Traffic and Transportation Figure 2**). The bus travels by the OGP site at 7 and 7:30 a.m., and 3 and 3:30 p.m. (Bonsall Union School District 2008)).

RAILROADS

The only rail line in the general project area is located west of the town of Fallbrook and is owned by Atchison Topeka and Santa Fe Railroad. The line is about eight miles west of the project site (see **Traffic and Transportation Figure 1).**

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

According to Appendix G of the California Environmental Quality Act (CEQA) Guidelines, a project may have a significant effect on traffic and transportation if the project would:

- cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections);
- exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways; result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;
- substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- result in inadequate emergency access; or

- result in inadequate parking capacity; or conflict with adopted policies, plans, or programs.

DIRECT/INDIRECT IMPACTS AND MITIGATION

Construction Impacts and Mitigation

When evaluating a project's potential impact on the local transportation system, staff uses LOS determinations as the foundation on which to base its analysis. The following discussion identifies potential traffic impacts associated with the construction of the OGP, and provides an explanation of the impact conclusion.

The AFC provides an analysis of projected traffic conditions with the addition of project construction traffic trips. Project construction is expected to be completed in about six months. Construction is expected to commence in April 2009 with commercial operation scheduled to begin in the fall of 2009. All plant construction workers would park on the OGP site (OGP 2008a, pg. 1-16). This would also serve as a laydown area for materials and equipment. Staff has determined that the parking area is adequate for the number of construction workers involved in the project.

Construction Workforce Traffic

To determine the amount of vehicle trips to the project site during average and peak construction, the applicant assumed that workers would commute during the morning and afternoon peak intervals (6 to 8 a.m. and 4 to 6 p.m.) from Monday through Friday. It is assumed that approximately 20% of the workers would carpool (OGP 2008a, pg. 6.11-12). The average number of construction workers would be 56, while the peak workforce would consist of 105 workers during a one month period (3). Given experience with previous projects, staff believes that the estimated construction traffic trips and assumptions about peak construction activity are reasonable. Based on regional demographics and availability of skilled laborers, the construction workers would probably come from San Diego and Riverside counties.

To reach the project site, the staff believes construction workers coming from San Diego and Riverside would use I-15 and exit onto SR-76. They would then go east until reaching Pala Del Norte Road and turn left to reach the OGP access road. A left turn (heading north) would lead to the project site. Staff believes that OGP construction workers from the Fallbrook/Oceanside area could travel on SR-76 to Pala Del Norte Road and onto the site. Staff does not anticipate that construction traffic would degrade the LOS on these roads below Caltrans and San Diego County acceptable standards (LOS C and D).

Construction Truck Traffic

Construction of the generating plant would require the use and installation of heavy equipment and associated systems and structures. Heavy equipment would be used throughout the construction period, including trenching and earthmoving equipment, forklifts, cranes, cement mixers and drilling equipment. A passenger car equivalent (PCE) factor of three cars per truck was used to determine the traffic impacts of trucks and heavy equipment deliveries (National Research Council 1994). Project construction is expected to require seven trucks on average and 15 trucks during peak construction

(PCE of 21 and 45, respectively per day (OGP 2008a, pg.6.11-12). In-bound and out-bound truck traffic would arrive and depart the project site using the same route as construction workers. If the delivery routes or the number of truck trips changes, staff would revisit the issue. Pursuant to Caltrans California Legal Advisory Truck Route guidelines, trucks using SR-76 east of I-15 should not exceed 30 feet length from king pin to rear axle (Caltrans 2007b). However, larger trucks (less than 38 feet) are not prohibited. In addition, staff has been advised that Caltrans will be changing the Advisory for the local section of SR-76 to allow larger truck traffic (Caltrans 2008c). Staff has been advised that the two on-site water tanks (535,000 gallons of potable water and 414,000 gallons of recycled water) will be filled during the middle of construction (month three or four). Assuming that a water truck can haul 6,500 gallons per trip, it would take about 146 trips to fill both tanks (OGP 2008f). If two trips occurred each hour for eight hours per day, it would take ten days to fill both tanks. Trucks hauling fresh water from a planned water hook-up would use East Mission Road from the intersection with East Live Oak Park Road and would proceed east to I-15, south to SR-76, and east to Pala Del Norte and would return using the same route. Recycled water trucks will leave the Fallbrook Public Utility District (FPUD) waste water facility and use Alturas Road north to Ammunition Road, east to Mission Road, south to SR-76, east to Pala Del Norte, and then return via the same route (see **Traffic and Transportation Figure 1**). Staff gathered traffic collision data and concluded that the traffic accident rates on some sections of road that would be used by the water trucks are higher than the statewide average (Fehr & Peers 2008). A Technical Memorandum is attached to this analysis that provides a traffic collision and roadway characteristics analysis for the road segments noted above. Water truck deliveries are not expected to change the existing LOS on these roadway segments.

Staff is proposing Condition of Certification **TRANS-4** which would require the project owner to work with Caltrans, the California Highway Patrol, and the San Diego County Sheriff's Office to consider whether any safety measures (e.g. truck escort) are appropriate to minimize the potential for traffic accidents involving the water delivery trucks. Staff is also proposing Condition of Certification **TRANS-2** to repair any damage to SR-76 or Pala Del Norte Road from construction traffic, particularly heavy trucks.

Total Construction Traffic

Total average construction traffic impact (workforce and trucks) would be 77 vehicle trips (56 workers plus 21 PCE for trucks and deliveries), or 154 one-way vehicle trips. Total peak construction traffic impact would be 155 vehicle trips (105 workers plus 45 PCE for trucks and deliveries), or 310 one-way vehicle trips. The average construction total is about a 0.15% increase in traffic (peak construction total is about a 0.16% increase) when compared to 2007 average daily traffic counts (9,439 on SR-76 east of I-15). The LOS A on SR-76 east of I-15 would not degrade substantially during construction but the applicant is proposing, and staff supports, a construction traffic control and management plan. However, the I-15 south-bound-ramp at SR 76 is currently (2007) LOS E during the morning peak period and the northbound ramp is LOS E during the afternoon peak (OGP 20082, table 1, pg. 6.11-20). In addition, traffic on SR-76 is LOS E during peak travel periods. Staff is proposing Condition of Certification **TRANS-1**. This condition requires preparation of a construction traffic

control and management plan that would, among other things, advise workers to avoid using these ramps and SR-76 west of Old Highway 395 during the congested peak periods.

Linear Facilities

Approximately 1.3 miles of 16-inch diameter pipeline would deliver natural gas to the project site. The pipeline would cross SR-76 at two locations and would be installed along the south and north side of SR-76. The pipeline would connect to a SDG&E gas line near Rice Canyon Road west of the project site (OGP 2008a, pp. 6.11-14 and 15). Recycled water for all the project needs would be supplied by the FPUD waste water facility on Alturas Road, about four miles north of the town of Bonsall. Fresh water would be provided by a new water pick-up station that will be installed at the intersection of Mission Road and Live Oak Road about one mile west of I-15, and two miles north of the intersection with SR-76. Traffic impacts from the construction of the linears would be short term in nature, mitigated by cones and flagmen when necessary, and would not significantly impact traffic flow. Proposed Condition of Certification **TRANS-1** would ensure that the project owner works with the Caltrans and San Diego County to mitigate any significant adverse impact on traffic flows on SR-76 during construction of the linear facilities.

School Bus Route

As noted earlier, the Bonsall Unified School District provides school bus service to transport students to and from Bonsall and Pala. Staff contacted the District to confirm the times the buses use SR-76 east of I-15 (Bonsall Unified School District 2008). The buses pass by the OGP site at 7 and 7:30 a.m. and 3 and 3:30 p.m. Staff's proposed Condition of Certification **TRANS-1** requires that project construction workers arrive at the site prior to 6:45 a.m. and depart after 3:45 p.m. to avoid encountering the school buses when they are using SR-76 east of I-15. If the school bus travel times on SR-76 east of I-15 change, worker arrival and departure times would need to change accordingly.

Construction Phase Transport of Hazardous Materials and Waste

Deliveries to the OGP site would include small quantities of hazardous materials to be used during project construction. The applicant has stated that the delivery/disposal of hazardous materials (about two trucks per month [OGP2008a, Table 6.11-5]) to and from the site, and materials handling on site would be conducted in accordance with all applicable federal and state statutes (see the **HAZARDOUS MATERIALS MANAGEMENT** section of this assessment for more information). The preferred transportation route for hazardous materials would utilize SR-76 and I-15.

Operation Impacts and Mitigation

Employee and Truck Traffic

Operation of the power plant would require a labor force of nine full-time employees though only six or less would be on a typical work shift (OGP 2008a, pg. 6.11-20). Other project-related trips (i.e. delivery trucks) are expected to be minimal (three to five per day) and would occur during regular business hours. Water truck trips would be a

maximum of two per hour. The applicant is proposing that water, both fresh and recycled, would be delivered by truck to the site via local roads identified above. If the delivery routes or the number of truck trips changes, staff would revisit the issue. Whatever safety measures are adopted pursuant to proposed Condition of Certification **TRANS-4** would apply to water truck deliveries during operation. Staff believes that operational workers would follow the same routes as for construction. These minor trip additions to surrounding local streets and highways would not significantly affect the LOS of these roads.

Transport of Hazardous Materials and Waste

The transportation and handling of hazardous substances associated with the project can increase roadway hazard potential. Impacts associated with hazardous material transport to the facility can be mitigated to a level of insignificance by compliance with existing federal and state standards established to regulate the transportation of hazardous substances. The applicant intends to comply with all federal and state regulations related to the transportation of hazardous materials (OGP 2006a, pp. 6.11-16 & 22).

Project operation would require use of hazardous substances including sulfuric acid and cleaning and water treatment chemicals. The five truck deliveries per day noted earlier includes hazardous materials such as aqueous ammonia. A licensed hazardous waste transporter would haul any hazardous waste from the project site to one of three Class 1 hazardous waste landfills in western Kern County near the communities of Buttonwillow and Kettleman City, and in Imperial County near the community of Westmoreland. The handling and disposal of hazardous substances are also addressed in the **WASTE MANAGEMENT, WORKER SAFETY AND FIRE PROTECTION** and **HAZARDOUS MATERIALS** sections of this assessment.

Airport Operations and Ground Hugging Plumes

As noted earlier, the Fallbrook Community Airpark is located about eight miles north of the OGP site. The project site is not in the landing or take-off pattern of this or any other airport. In addition, the Combustion Turbine Generator (CTG) stacks under most circumstances would not generate visible plumes. Since the plant would be operating during warm conditions (summer/fall), the CTG stacks would not create ground hugging plumes that could impact vehicle traffic on SR-76 (Aspen 2008b). Staff concludes that the proposed project CTG stacks would not cause a significant adverse impact on aircraft or vehicle operations.

Emergency Services Vehicle Access

Emergency service vehicles would reach the project site via SR-76, Pala Del Norte Road, and a primary access road. A second access road will be built on the eastern portion of the site that would ensure emergency ingress/egress once the project becomes operational (OGP 2008a, pg. 6.11-17). For a more detailed discussion of emergency services concerning adequate ingress/egress for the OGP, see the **WORKER SAFETY AND FIRE PROTECTION** section in this assessment.

CUMULATIVE IMPACTS

The applicant has identified a number of projects that are in various stages of planning or development. Staff agrees that the two most likely to affect the OGP are the Rosemary's Mountain Quarry project and the Pauma Casino expansion. The two major traffic impacts of the quarry project are the constructing of SR-76 from I-15 east for 1.3 miles to the access road to the quarry, and the estimated 150 to 180 truck trips per day during the three year construction process (OGP 2008a, pg. 6.11-24). The quarry mining project began in June 2008 with the construction of a new section of SR-76 that will be a four lane highway from I-15 to the quarry access road 1.3 miles east of the interstate. The construction should be completed by May 2009. The Pauma Casino expansion could begin in the spring or summer of 2009, but the project is still under review by San Diego County (Caltrans 2008d). Once the casino becomes operational, an estimated 4,365 new average daily trips would occur (Ibid, pg. 6.11-26). The other project that may overlap with the OGP construction is the Pala Casino expansion which is underway and could overlap with the first couple of month's construction of the OGP (Ibid, pg. 6.11-25). Once completed, the expansion could generate 1,032 average daily trips on SR-76. As noted earlier, SR-76 is LOS E west of old Highway 395. The applicant has agreed to pay a "transportation impact fee" to San Diego County to mitigate the OGP's cumulative transportation impacts (Ibid, pg. 6.11-27). Staff believes that this is appropriate mitigation. There would also be additional mitigation related to transportation improvements on SR-76 to deal with any additional projects.

Staff has considered the project area minority populations (as identified in **Socioeconomics Figure 1**) and low income populations in its impact analysis. There are no significant direct or cumulative traffic and transportation impacts, and therefore, no environmental justice issues.

COMPLIANCE WITH LORS

The applicant has provided a table listing all applicable LORS (OGP 2008a, Table 6.11-18, pp. 6.11-30 and 31). Staff has concluded that the project as proposed would comply with relevant LORS (see **Traffic and Transportation Table 3)**.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

Staff has reviewed a letter from the California Department of Transportation, District 11 (San Diego), offering several comments related to construction traffic impacts on SR-76. The comments involve the installation of the gas pipeline in Caltrans right-of-way and the need for a construction traffic control plan. These comments included requirements related to the installation of the gas pipeline in Caltrans right-of-way, potential traffic control plan, and applicable encroachment permits (Caltrans 2008a). Staff advised the applicant at the data responses and issues workshop to comply with the applicable requirements noted in the Caltrans letter (CEC 2008). Staff's proposed Condition of Certification **TRANS-1** addresses these concerns.

Traffic & Transportation Table 3
Project Compliance with Adopted Traffic and Transportation LORS

Applicable LORS	Description
Federal: Code of Federal Regulations (CFR) Title 14, Chapter 1, Part 77	Includes standards for determining obstructions in navigable airspace. Sets forth requirements for notice to the Federal Aviation Administration of certain proposed construction or alteration. Also, provides for aeronautical studies of obstructions to air navigation to determine their effect on the safe and efficient use of airspace.
	Consistent: The project is not located within 20,000 feet of any airport and its structures would not penetrate any navigable airspace. The applicant is not required to file a "Notice of Proposed Construction or Alteration" with the FAA. In addition the project does not have any structure exceeding 200 feet in height which also triggers a notification to the FAA.
Title 49, Subtitle B	Includes procedures and regulations pertaining to interstate and intrastate transport (includes hazardous materials program procedures), and provides safety measures for motor carriers and motor vehicles who operate on public highways.
	Consistent: Enforcement is conducted by state and local law enforcement agencies, and through state agency licensing and ministerial permitting (e.g., California Department of Motor Vehicles licensing, Caltrans permits), and/or local agency permitting (e.g., San Diego County Department of Public Works).
State: California Vehicle Code, Division 2, Chapter. 2.5, Div. 6, Chap. 7, Div. 13, Chap. 5, Div. 14.1, Chap. 1 & 2, Div. 14.8, Div. 15	Includes regulations pertaining to licensing, size, weight and load of vehicles operated on highways, safe operation of vehicles, and the transportation of hazardous materials.
	Consistent: Enforcement is provided by state and local law enforcement agencies, and through ministerial state agency licensing and permitting, and/or local agency permitting.
California Streets and Highway Code, Division 1 & 2, Chapter 3 & Chapter 5.5	Includes regulations for the care and protection of State and County highways, and provisions for the issuance of written permits.
	Consistent: Enforcement is provided by state and local law enforcement, and through ministerial state agency licensing and permitting, and/or local agency permitting.
Caltrans Acceptable LOS	LOS D or better
California Legal Advisory Route	30 or 38 KPRA – truck trailer can be no longer from king pin to rear axle.
	Consistent: The project would be in compliance with both these standards.

Applicable LORS	Description
Local: San Diego County General Plan – Circulation Element.	Objectives are to provide a guide for the provisions of a coordinated system of highway routes serving all sections of San Diego County, to help achieve efficiency and economy in this important field of public works, to facilitate the planning to meet and street and highway needs in subdivision and other land development programs and to inform the citizens of San Diego County of these plans.
	Consistent: The San Diego County General Plan's Circulation Element acknowledges that the road system in the project area should operate at LOS C or better. With implementation of proposed Condition of Certification **TRANS-1**, the local roads would meet the LOS standard with the addition of project related traffic.
Guidelines for Determining Significance-Traffic and Transportation-Public Facilities Element	New development shall provide needed roadway expansion and improvements on-site to meet demand created by development, and to maintain a Level of Service C on Circulation Element roads during peak traffic hours. New developers must pay a traffic impact fee for any cumulative project impacts.
	Consistent: The project would maintain the Level of Service (A) on SR-76 east of I-15 and the payment of traffic mitigation fees would help highway improvements related to cumulative traffic and transportation impacts.

CONCLUSIONS

1. The project as proposed would comply with all applicable LORS related to traffic and transportation, and would not degrade the LOS levels on SR-76 or Pala Del Norte Road.

2. Because of the distance from the Fallbrook Community Airpark, the project would not impact aviation safety.

3. Staff is proposing Condition of Certification **TRANS-1** which would require a construction traffic control plan to provide appropriate mitigation during project construction.

4. Staff is also proposing Condition of Certification **TRANS-2** which would require a mitigation plan to repair SR-76 or Pala Del Norte Road if it is damaged by project related traffic.

5. Proposed Condition of Certification **TRANS-3** would require that the project owner pay a traffic impact fee to San Diego County to mitigate the project's cumulative traffic and transportation impacts.

6. Staff is proposing Condition of Certification **TRANS-4** which would require the project owner to work with Caltrans, the California Highway Patrol, and the San Diego County Sheriff's Department to determine if traffic safety measures are needed to minimize potential traffic accidents involving the project's water delivery trucks.

7. There would be no unmitigated significant direct or cumulative traffic and transportation impacts and therefore no environmental justice issues.

PROPOSED CONDITIONS OF CERTIFICATION

TRANS-1 The project owner shall, in coordination with Caltrans and San Diego County, develop and implement a construction traffic control plan prior to site mobilization. Specifically, the overall traffic control plan shall include the following:

- Ensure that the project owner secures the encroachment permit for Caltrans right-of-way on SR-76 for the construction of the gas pipeline, and uses appropriate mitigation such as cones, signs, and flagmen to avoid unnecessary disruption of traffic flows on SR-76;
- Advise workers to avoid using the I-15 southbound/northbound ramps at SR-76 and also avoid using SR-76 west of Old Highway 395 during congested peak periods;
- Require workers to arrive at the site before 6:45 a.m. and depart after 3:45 p.m. to avoid encountering the Bonsall School District bus on SR-76: If the school bus travel time on SR-76 east of I-15 changes, worker arrival and departure times would change accordingly.
- Prior to site mobilization activities, the project owner shall provide the San Diego County Public Works Department for review and comment, and the CPM for review and approval, a traffic mitigation plan to maintain the existing LOS.

Verification: At least 90 days prior to the start of site mobilization activities, the project owner shall submit a construction traffic control plan to the Caltrans and the San Diego County Public Works Department for review and comment, and to the CPM for review and approval, to ensure that the construction of the linears and the increase in construction traffic would not adversely affect traffic flow on I-15 on-and-off ramps, SR-76 and Pala Del Norte Road.

TRANS-2 Prior to site mobilization activities, the project owner shall prepare a mitigation plan for SR-76 and Pala Del Norte Road should they be damaged by project construction. The intent of this plan is to ensure that if SR-76 and Pala Del Norte Road are damaged by project construction they will be repaired and reconstructed to original or as near original condition as possible. This plan shall include:

- Documentation of the pre-construction condition SR-76 and Pala Del Norte Road to the access road to the site. Prior to the start of site

mobilization, the project owner shall provide to the CPM photographs or videotape of SR-76 and Pala Del Norte Road

- Documentation of any portions of SR-76 and Pala Del Norte Road that may be inadequate to accommodate oversize or large construction vehicles, and identify necessary remediation measures; and
- Reconstruction of portions of SR-76 and Pala Del Norte Road that are damaged by project construction due to oversize or overweight construction vehicles.

Verification: At least 90 days prior to the start of site mobilization, the project owner shall submit a mitigation plan focused on restoring SR-76 and Pala Del Norte Road to its pre-project condition to Caltrans and San Diego County Public Works Department for review and comment, and to the CPM for review and approval.

Within 90 days following the completion of construction, the project owner shall provide photo/videotape documentation to Caltrans and the San Diego County Public Works Department, and the CPM that the damaged sections of SR-76 and/or Pala Del Norte Road have been restored to their pre-project condition.

TRANS-3 Prior to the start of commercial operations, the project owner shall pay San Diego County a traffic impact fee to pay for cumulative traffic and transportation improvements on the roads in the project area.

Verification: At least 30 days prior to the start of commercial operations, the project owner shall provide the CPM with proof that the traffic mitigation fee has been paid.

TRANS-4 Prior to the start of filling the project's potable and recycled water tanks, the project owner shall consult with Caltrans, the California Highway Patrol, and the San Diego County Sheriff's Department regarding potential traffic safety measures that would minimize the potential for traffic accidents on local roads involving the projects water delivery trucks. This would include any proposed changes in truck routes.

Verification: At least 60 days prior to the start of water tank fill-up, the project owner shall prepare a report describing consultation with the above listed agencies regarding measures, if any, that would reduce potential accidents involving the project's water delivery trucks. This report should be submitted to the listed agencies for review and comment, and to the CPM for review and approval. The report should include input from the applicable agencies.

REFERENCES

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FEHR & PEERS
TRANSPORTATION CONSULTANTS

TRAFFIC AND TRANSPORTATION TECHNICAL MEMORANDUM (Fehr & Peers 2008)

Date: October 30, 2008

To: James Adams, California Energy Commission

From: Matthew Manjarrez, P.E
Steven Brown, P.E.

Subject: ***Orange Grove Project Traffic Safety Assessment***

RS08-2632

Fehr & Peers has completed a traffic safety assessment of the water haul routes proposed for the Orange Grove Project. Specifically, we evaluated historical traffic collision data for the roadway segments that are part of the proposed haul routes, and we reviewed the physical characteristics of each segment to identify conditions that may be incompatible with the vehicles that will serve the project. The historical collision data was obtained from the Statewide Integrated Traffic Records System (SWITRS), and included all collisions on each roadway segment for the 36-month period from 2005 through 2007. The physical characteristics of each roadway segment were recorded during a field visit conducted by our staff on October 16, 2008.

Two different water haul routes are proposed, which are illustrated in Figure 6.11-3 of the Application for Certification. Fresh water would be brought in from the Fallbrook Public Utility District (FPUD) fresh water pickup station located on East Mission Road. The fresh water haul route would include East Mission Road (FPUD facility to I-15), I-15 (East Mission Road to SR 76), and SR 76 (I-15 to Pala del Norte Road). Reclaimed water would be brought in from the FPUD wastewater treatment plan located on Alturas Road. The reclaimed water haul route would include Alturas Road (FPUD facility to Ammunition Road), Ammunition Road (Alturas Road to South Mission Road), South Mission Road (Ammunition Road to SR 76), and SR 76 (South Mission Road to Pala del Norte Road). I-15 meets freeway design standards and is clearly able to safely carry the amount and type of truck traffic that would result form the Orange Grove project, so no detailed assessment of I-15 was performed. The traffic safety assessment included the following roadway segments:

- SR 76 between Pala del Norte Road and South Mission Road
- South Mission Road between SR 76 and Ammunition Road
- Ammunition Road between South Mission Road and Alturas Road
- Alturas Road between Ammunition Road and the FPUD fresh water facility
- East Mission Road between I-15 and the FPUD wastewater facility

FEHR & PEERS
TRANSPORTATION CONSULTANTS

HISTORICAL COLLISION DATA

Table 1 summarizes the historical collision data for each roadway segment listed above. The collision rate (collisions per million vehicle miles) was compared to published statewide average collision rates for similar facilities.

The total collision rate on the SR 76, South Mission Road, and Ammunition Road segments are higher than the statewide average. Only the SR 76 roadway segment has a fatal collision rate that is higher than the statewide average. The highest collision rates occur on Ammunition Road and Alturas Road. Notably, neither of these two roadways had any collisions involving trucks. In addition, the Alturas Road segment is very short and it carries a low traffic volume, so the collision rate may be subject to volatility due to the small statistical sample size; Alturas Road only experienced 4 collisions during the 36-month period being considered. Nearly half of the collisions on Ammunition Road were broadside type probably involving vehicles turning into and out of the driveways that are located throughout that roadway segment.

PHYSICAL ROADWAY CHARACTERISTICS

The field observations conducted on October 16th revealed that there were no sub-standard geometric features or conditions that would be incompatible with the types of trucks that will be using these roadways for the Orange Grove project. However, the following two issues should be considered.

- Alturas has a number of fronting properties with driveways and on-street parking. The fronting property owners may express concern that the planned truck activity deviates from the character of the roadway.

- East Mission and SR 76 both have a number of relatively sharp curves. However, the curves are clearly visible and well marked with advisory signs. Trucks can easily travel through these curves as long as their drivers are using reasonable care.

We hope this information is useful. Please contact Matthew Manjarrez at (916) 779-1900 with any questions, comments, or concerns.

TABLE 1

Historical Collision Data Summary

	Total Collisions	Fatal Collisions	**Total Collision Rate**		**Fatal Collision Rate**	
			Actual	Statewide Average	Actual	Statewide Average
SR 76 between S. Mission & Pala del Norte	345	7	2.45	1.32	.050	.029
S. Mission between SR 76 & Ammunition	242	3	1.91	1.56	.024	.067
Ammunition between S. Mission & Alturas	28	0	6.23	1.85	0	.013
Alturas between Ammunition & FPUD Facility	4	0	3.72	n/a	0	n/a
E. Mission between I-15 & FPUD Facility	25	0	1.01	2.95	0	.012

Notes:

1. The collision rates that are higher than statewide average are shaded. Statewide averages are not available for a roadway such as Alturas.

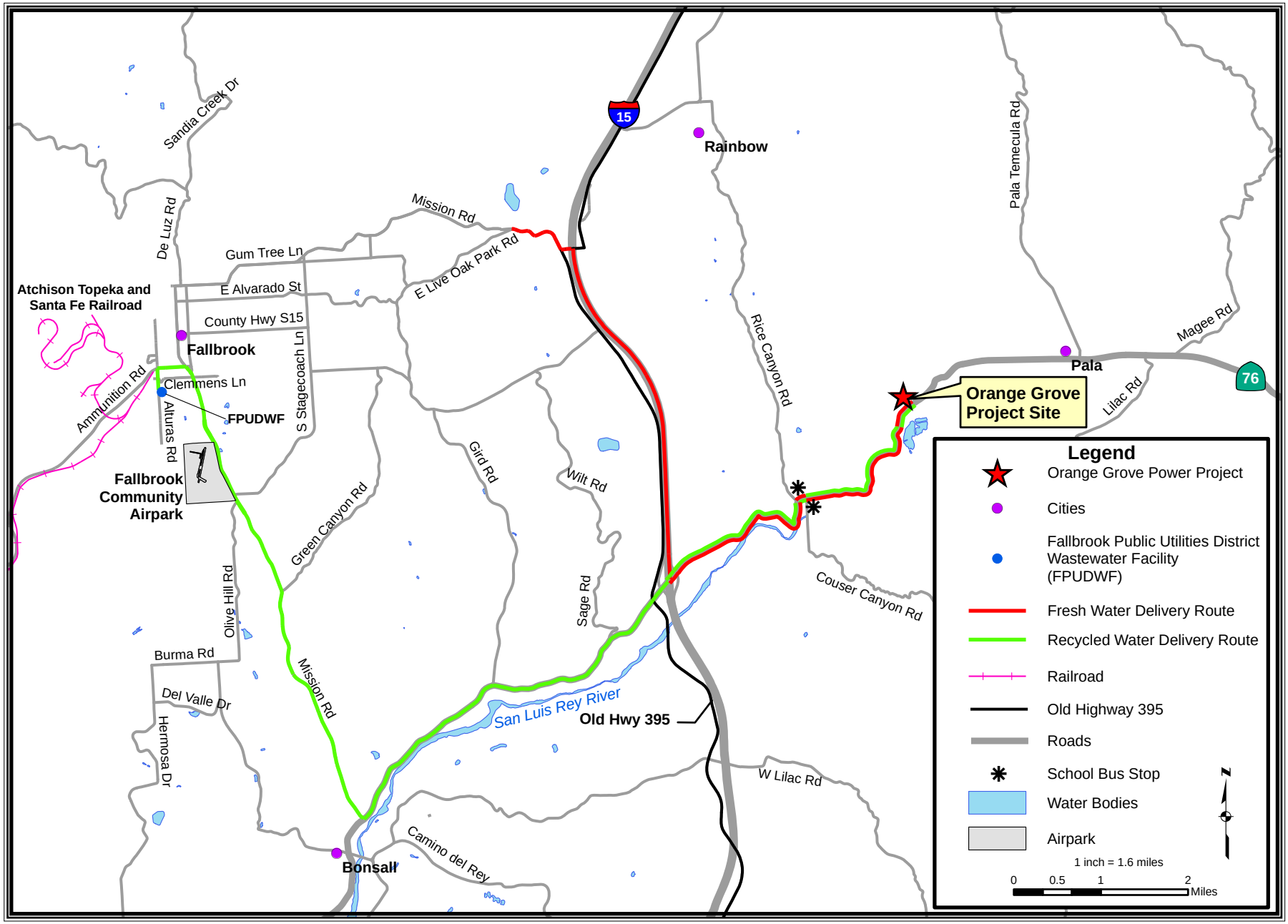
2. The collision rates are given in collisions per million vehicle miles traveled.

3. The statewide average rates were obtained from *1999 Accident Data on California State Highways* (Caltrans, June 2000). The rate group used for each roadway segment is listed below.

- SR 76: Rate Group H03 – Rural Conventional Highway, 2 Lanes, Rolling Terrain, Design Speed ≤ 55 mph
- S. Mission: Blended Rate Groups H03, H35, and H43 based on a weighted average.
- Ammunition Road: Rate Group H35 – Suburban Conventional Highway, 4 Lanes, Divided, Design Speed ≤ 55 mph
- E. Mission: Rate Group H07 – Suburban Conventional Highway, 2 Lanes, Rolling Terrain, Design Speed < 45 mph

TRAFFIC AND TRANSPORTATION - FIGURE 1

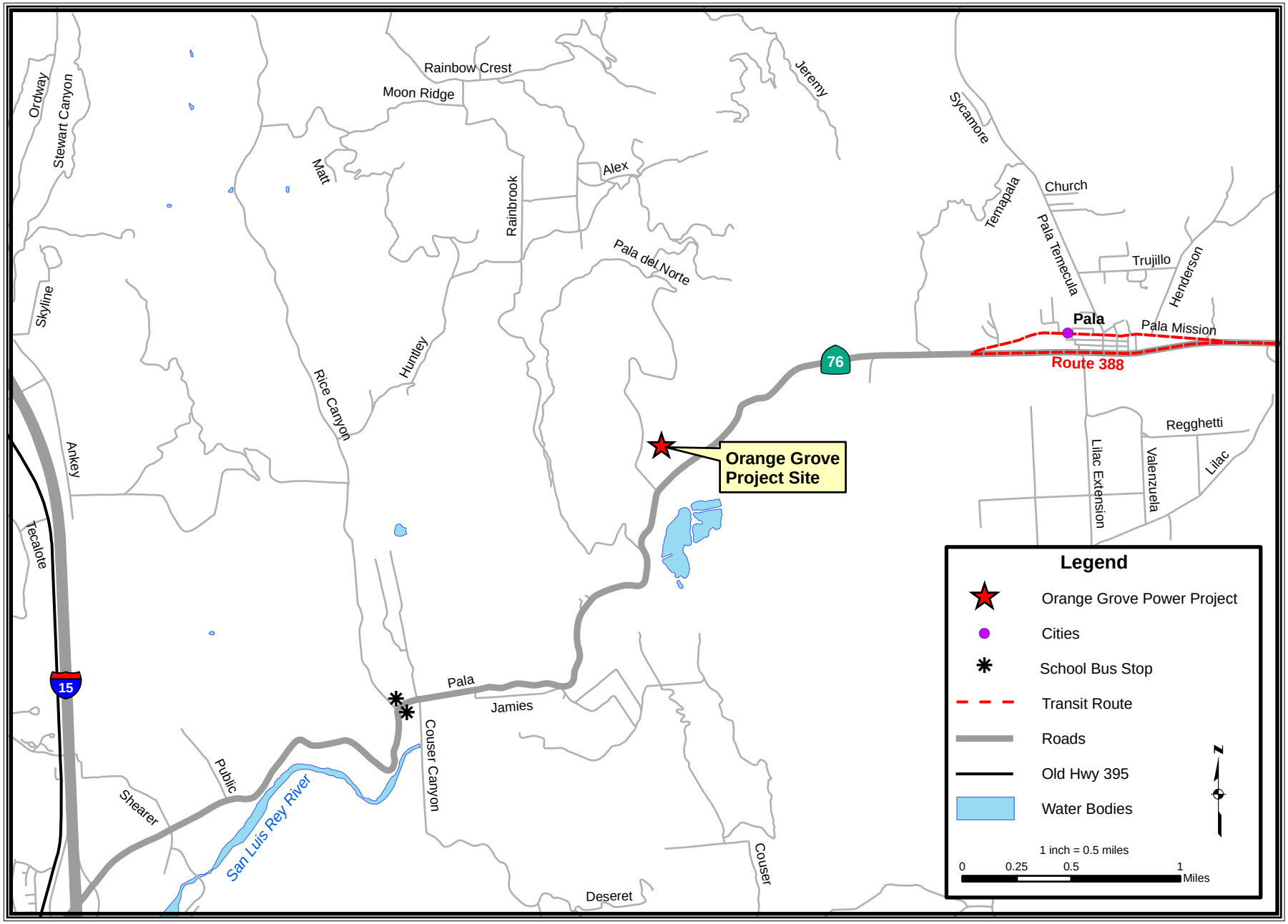
Orange Grove Project - Regional Transportation System



SOURCE: California Energy Commission

TRAFFIC AND TRANSPORTATION - FIGURE 2

Orange Grove Project - Local Transportation System



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION, NOVEMBER 2008

SOURCE: California Energy Commission

TRANSMISSION LINE SAFETY AND NUISANCE

Testimony of Obed Odoemelam, Ph.D.

SUMMARY OF CONCLUSIONS

The applicant, Orange Grove Energy (OGE) LLC, proposes to transmit the power from the proposed Orange Grove Project (OGP) to the San Diego Gas and Electric (SDG&E) transmission grid through an underground, 0.3-mile, single-circuit, 69-kV line via SDG&E's Pala Substation. The project and transmission line are located within a SDG&E 202-acre property. The proposed line's route would lie entirely within SDG&E's property with no nearby residents meaning that there would not be residential field exposure of the health concern of recent years. Since the project and related line would be owned and operated by the applicant within SDG&E's service territory, the proposed line design, construction, and maintenance plan would be according to standard SDG&E practices, which conform to applicable laws, ordinances, regulations and standards (LORS). With the one proposed condition of certification, any line-related safety and nuisance impacts would be at levels reflecting the present California Public Utilities Commission (CPUC) policy on field management, and less than significant.

INTRODUCTION

The purpose of this analysis is to assess the design and operational plan for the proposed Orange Grove Project's transmission line to determine whether its related field and non-field impacts would constitute a significant environmental hazard in the area around the proposed route. All related health and safety LORS are currently aimed at minimizing such hazards. Staff's analysis focuses on the following issues taking into account both the physical presence of the line and the physical interactions of its electric and magnetic fields:

- aviation safety;
- interference with radio-frequency communication;
- audible noise;
- fire hazards;
- hazardous shocks;
- nuisance shocks; and
- electric and magnetic field (EMF) exposure.

The following federal, state, and local laws and policies apply to the control of the field and non-field impacts of electric power lines. Staff's analysis examines compliance with these requirements as related to the type of underground line proposed.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS

Transmission Line Safety and Nuisance (TLSN) Table 1
Laws, Ordinances, Regulations and Standards (LORS)

Applicable LORS	Description
Aviation Safety	
Federal	
Title 14, Part 77 of the Code of Federal Regulations (CFR),"Objects Affecting the Navigable Air Space"	Describes the criteria used to determine the need for a Federal Aviation Administration (FAA) "Notice of Proposed Construction or Alteration" in cases of potential obstruction hazards.
FAA Advisory Circular No. 70/7460-1G, " Proposed Construction and/or Alteration of Objects that May Affect the Navigation Space"	Addresses the need to file the "Notice of Proposed Construction or Alteration" (Form 7640) with the FAA in cases of potential for an obstruction hazard.
FAA Advisory Circular 70/460-1G, "Obstruction Marking and Lighting"	Describes the FAA standards for marking and lighting objects that may pose a navigation hazard as established using the criteria in Title 14, Part 77 of the CFR.
Interference with Radio Frequency Communication	
Federal	
Title 47, CFR, Section 15.2524, Federal Communications Commission (FCC)	Prohibits operation of devices that can interfere with radio-frequency communication.
State	
California Public Utilities Commission (CPUC) General Order 52 (GO-52)	Governs the construction and operation of power and communications lines to prevent or mitigate interference.
Audible Noise	
Local	
San Diego County Code of Regulatory Ordinances	Specifies the County's Noise Standards for the differing land uses.
Hazardous and Nuisance Shocks	
State	
Title 8, California Code of Regulations (CCR) Section 2700 et seq. "High Voltage Safety Orders"	Specifies requirements and minimum standards for safely installing, operating, working around, and maintaining electrical installations and equipment.
National Electrical Safety Code	Specifies grounding procedures to limit nuisance shocks. Also specifies minimum conductor ground clearances.

Applicable LORS	Description
Industry Standards	
Institute of Electrical and Electronics Engineers (IEEE) 1119, "IEEE Guide for Fence Safety Clearances in Electric-Supply Stations"	Specifies the guidelines for grounding-related practices within the right-of-way and substations.
Electric and Magnetic Fields	
State	
GO-128, CPUC. "Rules for Construction of Underground Electric Supply and Communication Systems".	Specifies requirements for safety for all persons engaged in construction, maintenance, operation or use of underground systems and to the general public.
CPUC Decision 93-11-013	Specifies CPUC requirements for reducing power frequency electric and magnetic fields.
Industry Standards	
American National Standards Institute (ANSI/IEEE) 644-1944 Standard Procedures for Measurement of Power Frequency Electric and Magnetic Fields from AC Power Lines	Specifies standard procedures for measuring electric and magnetic fields from an operating electric line.
Fire Hazards	
State	
14 CCR Sections 1250-1258, "Fire Prevention Standards for Electric Utilities"	Provides specific exemptions from electric pole and tower firebreak and conductor clearance standards and specifies when and where standards apply.

SETTING

As noted in the **Project Description** section of this assessment, the site for the proposed Orange Grove Project is an 8.5-acre SDG&E land parcel in an unincorporated area of San Diego County, California, approximately 5 miles east of the town of Fallbrook and 2 miles west of the community of Pala. The area within a 3-mile radius of the project site consists of agricultural land and open space with scattered rural single-family housing (OGP 2008, pp 6.12-7, 6.12-8 and 6.16-2). Routing the line within SDG&E's property boundaries means that there would be no potential for the residential field exposures at the root of the health concern of recent years. The project site was chosen in part for its closeness to SDG&E's Pala Substation through which the facility would be connected to the SDG&E electric power grid (OGE 2008, pp. 2-2, 2-3, and 3-1through 3-3).

PROJECT DESCRIPTION

The proposed OGP line consists of the segments listed below:

- The 0.3-mile 69-kV, single-circuit, underground line extending from the project's switchyard to the SDG&E Pala Substation to the south;

- The project's on-site 69-kV switchyard from which the conductors would extend to the connection points at the Pala Substation; and
- Project-related SDG&E modifications within the Pala Substation.

The proposed line would be located underground along a paved private Pala Del Norte Road within the SDG&E property. The provided right-of-way would be 20 feet wide. The line would be located within an underground conduit with concrete casing and within a depth in keeping with standard SDG&E and industry practices that ensure safety, efficiency reliability, and maintainability.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHODS AND THRESHOLDS FOR DETERMINING SIGNIFICANCE

The potential magnitude of the line impacts of concern in this staff analysis depends on compliance with the listed design-related LORS and industry standards that apply to the proposed and other underground lines. These LORS have been established to maintain impacts below levels of potential significance. Thus, if staff determines that the project would comply with applicable LORS, we would conclude that any transmission line-related safety and nuisance impacts would be less than significant. The nature of these individual impacts is discussed below together with the potential for compliance with the LORS that apply.

DIRECT IMPACTS AND MITIGATION

Aviation Safety

Any potential hazard to area aircraft would relate to the potential for collision in the navigable airspace. Since the proposed line would be located underground around the proposed route, it would pose no collision hazard to area aircraft, meaning that the listed aviation-related LORS would not apply.

Interference with Radio-Frequency Communication

Transmission line-related radio-frequency interference is one of the indirect effects of line operation and is produced by the physical interactions of line electric fields. Since such effects are produced by electric fields which, unlike the companion magnetic fields, are unable to penetrate the soils and other materials, such electric field-related interference are not associated with underground lines such as proposed for the Orange Grove Project.

Audible Noise

As with radio-frequency noise, audible noise from transmission lines usually results from the action of the electric field at the surface of line conductor and could be perceived as a characteristic crackling, frying, or hissing sound or hum, especially in wet weather.

As with radio-frequency noise, the potential lack of electric field effects from the proposed and other underground lines means that audible noise would not be produced during operations.

Fire Hazards

The fire hazards addressed through the related LORS in **TLSN Table 1** are those that could be caused by sparks from conductors of overhead lines, or that could result from direct contact between the line and nearby trees and other combustible objects. Since the proposed Orange Grove Project line would be located underground, there would be a minimal potential for fires from line contact with combustible materials.

Hazardous Shocks

Hazardous shocks are those that could result from direct or indirect contact between an individual and the energized line, whether overhead or underground. Such shocks are capable of serious physiological harm or death and remain a driving force in the design and operation of transmission and other high-voltage lines.

No design-specific federal regulations have been established to prevent hazardous shocks from overhead or underground power lines. Safety is assured within the industry from compliance with the requirements specifying the minimum national safe operating clearances applicable in areas where the line might be accessible to the public.

The applicant's stated intention to implement the GO-128-related measures against direct contact with the energized line (OGE 2008a, pp.3-1 through 3-4) would serve to minimize the risk of hazardous shocks. Staff's recommended Condition of Certification **TLSN-1** would be adequate to ensure implementation of the necessary mitigation measures.

Nuisance Shocks

Nuisance shocks are caused by current flow at levels generally incapable of causing significant physiological harm. They result mostly from direct contact with metal objects electrically charged by fields from the energized line. Such electric charges are induced in different ways by the line's electric and magnetic fields. Since the proposed line would be located underground according to GO-128 requirements, there would be a minimal potential for nuisance shocks from induced currents.

Electric and Magnetic Field Exposure

The possibility of deleterious health effects from EMF exposure has increased public concern in recent years about living near high-voltage lines. Both electric and magnetic fields occur together whenever electricity flows and exposure to them together is generally referred to as EMF exposure. The CPUC, other regulatory agencies, and staff have evaluated the available evidence and concluded that such fields do not pose a significant health hazard to exposed humans. There are no health-based federal regulations or industry codes specifying environmental limits on the strengths of fields from power lines. Most regulatory agencies believe, as staff does, that health-based limits are inappropriate at this time. They also believe that the present knowledge of the issue does not justify any retrofit of existing lines.

Staff considers it important, as does the CPUC, to note that while such a hazard has not been established from the available evidence, the same evidence does not serve as proof of a definite lack of a hazard. Staff, therefore, considers it appropriate in light of

present uncertainty, to recommend feasible reduction of such fields without affecting safety, efficiency, reliability and maintainability.

While there is considerable uncertainty about EMF health effects, the following facts have been established from the available information and have been used to establish existing policies:

- Any exposure-related health risk to the exposed individual will likely be small.
- The most biologically significant types of exposures have not been established.
- Most health concerns are about the magnetic field.
- There are measures that can be employed for field reduction, but they can affect line safety, reliability, efficiency, and maintainability, depending on the type and extent of such measures.

State

In California, the CPUC (which regulates the installation and operation of many high-voltage lines owned and operated by investor-owned utilities) has determined that only no-cost or low-cost measures are presently justified in any effort to reduce power line fields beyond levels existing before the present health concern arose. The CPUC has further determined that such reduction should be made only in connection with new or modified lines. It requires each utility within its jurisdiction to establish EMF-reducing measures and incorporate such measures into the designs for all new or upgraded power lines and related facilities within their respective service areas. The CPUC further established specific limits on the resources to be used in each case for field reduction. Such limitations were intended by the CPUC to apply to the cost of any redesign to reduce field strength or relocation to reduce exposure. Publicly owned utilities, which are not within the jurisdiction of the CPUC, voluntarily comply with these CPUC requirements. This CPUC policy resulted from assessments made to implement CPUC Decision 93-11-013.

In keeping with this CPUC policy, staff requires a showing that each proposed overhead or underground line would be designed according to the safety and EMF-reducing design guidelines applicable to the utility service area involved. These field-reducing measures can impact line operation if applied without appropriate regard for environmental and other local factors bearing on safety, reliability, efficiency, and maintainability. Therefore, it is up to each applicant to ensure that such measures are applied in ways that prevent significant impacts on line operation and safety. The extent of such applications would be reflected by ground-level field strengths as measured during operation. When estimated or measured for lines of similar voltage and current-carrying capacity, such field strength values can be used by staff and other regulatory agencies to assess the effectiveness of the applied reduction measures and any related need for mitigation.

Since the proposed line would be located underground, only the ground-penetrating magnetic field component would be encountered above ground. Its above-ground levels can be estimated or measured for a height of one meter above the ground, in units of milligauss (mG). The magnitude in each case would depend on the amount of current on the line, and the degree of cancellation from the presence of the other conductors.

The closer the conductors are placed together, (whether above or below ground), the greater the degree of cancellation and thus the lower the resulting field intensity. Since undergrounding potentially results in the least distance between the individual conductors, the proposed design and construction according to GO-128 requirements would constitute compliance with present CPUC policy of minimizing the intensity of fields from high-voltage lines. Since undergrounding potentially produces the lowest human exposure levels possible for lines of the proposed current-carrying capacity, staff does not consider operational-phase field strength measurements (for possible mitigation purposes) as necessary for this line and recommends Condition of Certification **TLSN-1** to ensure implementation of the necessary GO-128-related measures.

CUMULATIVE IMPACTS AND MITIGATION

Since the proposed project transmission line would be located underground to produce magnetic fields of the lowest intensity possible (without affecting safety, efficiency, reliability, and maintainability) as is current SDG&E practice, any contribution to cumulative area exposures should be at the lowest levels possible given present industry practices and CPUC requirements. Such minimal contribution to any cumulative exposures constitutes compliance with current CPUC requirements on EMF management. No mitigation-driven requirements for field strength measurements would be necessary.

COMPLIANCE WITH LORS

As previously noted, current CPUC policy on safe EMF management requires that any high-voltage overhead or underground line within a given area be designed to incorporate the field strength-reducing guidelines of the main area utility lines to be interconnected. The utility in this case is SDG&E. Since (a) the proposed underground line would produce magnetic fields of the lowest intensity possible without affecting safety, efficiency, reliability, and maintainability, and (b) the requirement for such field strength minimization is the driving force behind the applicable LORS, staff considers the proposed design and operational plan to be in compliance with the health and safety requirements of concern in this analysis and does not recommend any mitigation-driven field strength measurements during operation.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

Staff received no public or agency comments on the transmission line nuisance and safety aspects of the proposed Orange Grove Project.

CONCLUSIONS

Since the proposed transmission line would be an underground line, it would not pose a collision hazard to area aircraft. The potential for nuisance shocks would be minimal from the line's underground location. The absence of related electric fields would prevent production of the audible noise and radio-frequency noise associated with the overhead counterparts.

Since health effects have neither been established nor ruled out for the line's magnetic fields, the public health significance of any related exposures cannot be characterized with certainty. The only conclusion to be reached with certainty is that the proposed undergrounding would ensure magnetic fields of the lowest intensity possible from SDG&E lines of similar voltage and current-carrying capacity. Such similarity in intensity constitutes Compliance with present CPUC policy on field management.

Staff's recommended Condition of Certification (**TLSN-1**) is intended to ensure compliance with the GO-128 requirements that apply.

PROPOSED CONDITIONS OF CERTIFICATION

TLSN-1 The project owner shall construct the proposed transmission lines according to the requirements of California Public Utility Commission's GO-128 and SDG&E's EMF-reduction guidelines.

Verification: At least thirty days before starting construction of the transmission line or related structures and facilities, the project owner shall submit to the Compliance Project Manager (CPM) a letter signed by a California registered electrical engineer affirming that the lines will be constructed according to the requirements stated in the condition.

REFERENCES

Electric Power Research Institute (EPRI) 1982. Transmission Line Reference Book: 345 kV and Above.

National Institute of Environmental Health Services 1998. An Assessment of the Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields. A Working Group Report, August 1998.

OGP2008a-OGE/S. Thome (tn46770). Application for Certification of Orange grove Energy, Volumes I-III, dated 6/19/08. Submitted to the California Energy Commission on 6/19/08.

VISUAL RESOURCES

Testimony of David Flores

SUMMARY OF CONCLUSIONS

Staff has analyzed visual resource related information pertaining to the proposed Orange Grove Project, and found that the project, with staff-recommended conditions of certification, would not introduce an adverse “Aesthetic” impact under the California Environmental Quality Act and Guidelines, and would comply with applicable laws, ordinances, regulations, and standards pertaining to aesthetics or preservation and protection of sensitive visual resources.

INTRODUCTION

Visual resources are the visible natural and man-made features of the environment. In this section, staff evaluates the proposed project’s construction and operation using the “Aesthetic” criteria of the California Environmental Quality Act (CEQA) Guidelines to determine if the project would introduce a significant impact under CEQA, and if the project would comply with applicable laws, ordinances, regulations, and standards (LORS) pertaining to aesthetics or preservation and protection of sensitive visual resources.

In order to provide a consistent framework for the analysis, a standard visual assessment methodology developed by Energy Commission staff and applied to numerous siting cases in the past was employed in this study. A description of this methodology is provided in **APPENDIX VR-1.**

LAWS, ORDINANCES, REGULATION, AND STANDARDS

Visual Resources Table 1 provides a general description of identified adopted federal, state, and local LORS pertaining to aesthetics or preservation and protection of sensitive visual resources relevant to the proposed project.

Visual Resources Table 1
Laws, Ordinances, Regulations, and Standards

Applicable LORS	**Description**
Federal	
Transportation Equity Act for the 21st Century of 1998, and Safe, Accountable, Flexible, and Efficient Transportation Equity Act of 2005.	The project site does not involve federal managed lands, nor a recognized National Scenic Byway or All-American Road within its vicinity.
State	
California Streets and Highways Code, Sections 260 through 263 – Scenic Highways	Ensures the protection of highway corridors that reflect the State's natural scenic beauty.
Local	
San Diego County General Plan, adopted 12/3/79 <u>Circulation/Scenic Highways Element</u>	Encourages visual integration of projects of differing types or densities through the use of building setbacks, landscaped buffers, or other design features. Ensures that design reflects concerns about the preservation of viewsheds. Provides the San Diego Scenic Corridor Guidelines, designated corridors and streets. The project site is located along SR 76, and this stretch is not listed as a scenic route.
County of San Diego Zoning Ordinance (Ordinance 5281), adopted 12/19/78 Section 4000 and Zone A –Light Pollution Code - Part 6-General Regulations “GI” General Agricultural Zone, including sign requirements.	Provides site review requirements, and establishes performance standards for development projects including architectural design, landscaping, exterior lighting and outdoor storage. Requires that architectural design of structures and their materials and colors are visually harmonious with surrounding development and natural land forms. Includes requirements for placement of buildings and building heights. Regulates the design, character, location, number, type, quality of materials, size, illumination and maintenance of signs.

SETTING

The proposed Orange Grove Project (OGP) would be built within the unincorporated county of San Diego, California, approximately four miles east of Interstate 15 and two miles west of the community of Pala. The site is also situated five miles west of the Cleveland National Forest, north of State Route (SR-76) and the San Luis River, east of Monserate Mountain.

The regional landscape setting is primarily rural, including agriculture, large plot residential, small communities, open space, and large-scale commercial-industrial facilities. North of the project site, the ground slopes uphill to a ridgeline that surrounds the site to the northeast, north and west, at elevations of up to 1,700 feet. Three existing homes located on the ridgeline would have a view of the project site.

South of the site, on the opposite side of SR-76, is a former aggregate mine within the San Rey River bed. The former mining pits are filled with water with natural grasses surrounding the ponds. The former mine property has recently been acquired by the Pala Indians, and the Tribe currently has no plans for developing the site.

In general, scenic quality of the project viewshed is comparatively high, distinguished by views of the various hills and mountains in the background.

PROJECT SITE

Visual Resources Figure 1 - view of the Project Site, depicts views from within the proposed Orange Grove Project site (all figures referred to in the text may be found at the end of this section). As discussed in the Application of Certification (AFC), the most visually dominant of the proposed project facilities are the two, 80-foot high stacks. The stacks would be painted a color similar to the dominant color of the hillsides surrounding the site. **Visual Resources Table 2** depicts architectural elevations of the proposed power plant.

The proposed OGP site is located in rural north San Diego County about five miles northeast of the city of Fallbrook and approximately two miles west of the community of Pala. The project site is at an elevation of approximately 360 to 440 feet above mean sea level on a gently sloping (approximately 10%) old alluvial fan surface. The project site does not have any undisturbed natural habitat. The majority of the site has been used for agriculture, and is occupied by a former citrus grove. A fenced San Diego Gas and Electric Company (SDG&E) storage area is located just south of the project site on an adjacent parcel, and is an area that will be used for the construction laydown.

Visual Resources Table 2
Summary of Major Publicly Visible Structures

Proposed New Project Component	Number of Units	Length and Width (approximately)	Height (approximately)
HRSGs	2	12.5 feet	80 feet
Raw Water Tank	1	50 feet	40 feet
Chiller System	1	89 – 32 feet	30 feet
Turbine Enclosures	2	57 – 37 feet	43 feet
Emission Control System	2	89 – 32 feet	33 feet
Demineralized Water Storage	1	31 feet	22 feet

The OGP linear facilities include an electric transmission interconnection (underground), electric transmission upgrades and installation of a underground gas pipeline. The following is a brief description of each off-site installation:

Transmission Lines – The transmission line interconnection would be buried underground within Pala Del Norte Road from the project site to the existing Pala substation. The transmission line would be buried in a common trench with the natural gas pipeline (OGP 2008a pg.6.13-3).

Reclaim Water – The reclaimed water pickup station would be located at an existing Fallbrook Public Utility District waste water treatment plant. As discussed in the AFC, the water would be transported by delivery trucks to the project site. See the **TRAFFIC AND TRANSPORTATION** section of this analysis for additional discussion of transportation issues. (OGP 2008a, pg. 1-4).

Natural Gas Pipeline – The natural gas pipeline would be buried underground within Pala Del Norte Road from the project site to the existing Pala substation. From the southwest corner of the substation, the gas pipeline would be constructed south for approximately 0.4-mile over mountainous terrain, primarily following existing paved roads to an existing regional gas transmission line. (OGP 2008a, pg. 6.13-3).

Construction Staging Area – Both construction laydown and worker parking will be provided at the project site. (OGP 2008a, pg. 6.11-18).

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

To determine whether there is a potentially significant visual resources impact generated by a project, Energy Commission staff reviews the project using the 2008 CEQA Guidelines Appendix G Environmental Checklist pertaining to “Aesthetics.” The checklist questions include the following:

A. Would the project have a substantial adverse effect on a scenic vista?

B. Would the project substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?

C. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

D. Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Staff evaluates both the existing visible physical environmental setting, and the anticipated visual change introduced by the proposed project to the view, from representative, fixed vantage points (called "Key Observation Points" [KOPs]). KOPs are selected to be representative of the most characteristic and most critical viewing groups and locations from which the project would be seen. The likelihood of a visual impact exceeding Criterion C of the CEQA Guidelines, above, is determined in this study by two fundamental factors: the susceptibility of the setting to impact as a result of its existing characteristics (reflected in its current level of visual quality, the potential visibility of the project, and the sensitivity to scenic values of its viewers); and the degree of visual change anticipated as a result of the project. These two factors are summarized respectively as *visual sensitivity* (of the setting), and *visual change* (due to the project) in the discussions below. Briefly, KOPs with high sensitivity (due to outstanding scenic quality, high levels of viewer concern, etc.), that experience high levels of visual change from a project, are more likely to experience adverse impacts. KOPs with low sensitivity or low levels of visual change are not.

Staff also reviews federal, state, and local LORS and their policies or guidelines for aesthetics or preservation and protection of sensitive visual resources that may be applicable to the project site and surrounding area. These LORS include local government land use planning documents (e.g., General Plan, zoning ordinance).

Visual Resources Figure 2 shows the locations of the three KOPs used in this analysis:

- KOP 1 – view from motorist traveling east on SR 76:
- KOP 2 – view from motorist traveling west on SR 76; and
- KOP 3 – represents views from slopes to the northeast of the project site where three homes are located.

The three KOPs are depicted in the context of the overall project viewshed or area of potential visual effect (the area within which the project could potentially be seen). See **APPENDIX VR-1** for information about the process used to evaluate each KOP.

Staff's analysis of the project's effect on each KOP is presented under Operation Impacts.

DIRECT/INDIRECT IMPACTS AND MITIGATION

The impact discussion is presented under the following four criteria from CEQA Guidelines Appendix G: scenic vistas, scenic resources, visual character or quality, and light or glare.

A. Scenic Vistas

"Would the project have a substantial adverse effect on a scenic vista?"

A scenic vista for the purpose of this analysis is defined as a distant view through and along a corridor or opening that exhibits a high degree of pictorial quality. There are no scenic vistas in the KOP 1, KOP 2 and KOP 3 viewsheds, based on staff's field reconnaissance, review of topographical maps, and review of the County of San Diego's General Plan documents. The proposed project would not cause a significant visual impact to a scenic vista.

B. Scenic Resources

"Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway corridor?"

A scenic resource for the purpose of this analysis includes a unique water feature (waterfall, transitional water, part of a stream or river, estuary); a unique physical geological terrain feature (rock masses, outcroppings, layers or spires); a tree having a unique visual/historical importance to a community (a tree linked to a famous event or person, an ancient old growth tree); historic building; or other scenically important physical features, particularly if located within a designated federal scenic byway or state scenic highway corridor.

San Antonio de Pala is located along Pala Mission Road (just north of SR 76) in Pala, approximately 1.5 miles east of the project site. This historical site was a sub-mission of Mission San Luis Rey de Francia. It was established in 1816 and is the only surviving mission still ministering to an Indian population. Because of its distance from the project site and intervening buildings, landforms, and vegetation, the OGP would not be visible from the mission.

No other notable scenic resources were identified within the project viewshed.

State Route 76 runs along the southern boundary of the project site. This portion of State Route 76 is not designed a State Scenic Highway; nor is it listed as eligible by the California Department of Transportation (CalTrans 2008). Consequently, no eligible or designated state scenic highways are located within the area of the proposed project.

C. Visual Character or Quality

"Would the project substantially degrade the existing visual character or quality of the site and its surroundings?" The project aspects evaluated under this criterion are broken down into two categories: Construction Impacts and Operation Impacts.

Construction Impacts and Mitigation

The AFC indicates that the project staging and worker parking area would be located on the project site nearest to SR-76. The equipment and material storage would be prominent and the effect would potentially not be beneficial, but adverse, for the duration of project construction. In the worst case, prominent and unsightly construction

staging at this location could result in adverse impacts to viewers on SR 76. To address this potential impact, staff recommends Condition of Certification **VIS-2**, which provides for screening during construction. With this condition, and considering the temporary nature of construction, impacts at the project site would be less than significant.

Trenching for cut-and-cover construction of a proposed natural gas pipeline and underground transmission line on Pala del Norte Road and SR-76 would create a temporary visual disturbance. These disturbances would be phased, and would last for a period of three weeks (OGP 2008a). Given the temporary short-term effect, the visual impact would be less than significant.

Other major project construction activities would be largely screened from off-site viewpoints by the surrounding hills on three sides of the OGP site. An exception to this would be along the SR-76, where equipment and material access, and construction of tall spoil berms would create prominent visual disruptions for the period of construction, as seen primarily by the traveling public. However, considering the moderate existing visual quality of this segment of SR-76, the fleeting nature of views within it, the relatively limited number of affected viewers, and the temporary nature of impacts, these effects are considered to be less than significant.

Anticipated impacts from construction lighting are discussed under Light and Glare.

*Staff-Recommended Mitigation: T*o address the potential adverse impacts of construction and construction staging at the project site, staff recommends Condition of Certification **VIS-2** which would include the following:

- planting of additional landscape screening, including tree and shrub plantings, on the southern boundary of the project site at the earliest feasible time, during early stages of project construction; and,
- temporary, dark-colored opaque fencing surrounding the staging areas to provide screening in the short term, as landscape screening matures.

Operation Impacts and Mitigation

As described above, operation impacts are discussed by representative key observation points (KOPs). As also described previously, potential impacts are identified by two fundamental factors for each KOP: *visual sensitivity* (the susceptibility of the setting to impact as a result of its existing characteristics, including current level of visual quality, potential visibility of the project, and sensitivity to scenic values of viewers); and the degree of *visual change* anticipated as a result of the project.

KOP 1 – View from State Route 76 Looking South towards the Project Site

Visual Resources Figures 3A through 3D depict the view taken at the intersection of SR 76 and Pala del Norte Road approximately 700 feet from the site boundary. This view is representative of the public traveling east on SR 76***. In addition, Figures 3C and 3D provide a landscape simulation of native plants and trees, and their effectiveness for screening of the project at ten years and twenty years after construction.***

Visual Sensitivity

Eastbound motorists on SR-76 at this location have views of the rural countryside and hills. Viewer exposure to the project site, which occupies the visual foreground of the roadway to the east, is moderate. The viewers along SR-76 are generally local residents and motorists traveling to and from the two Indian casinos in the area. The intervening terrain and vegetation along SR-76 near the project site and the low shrub and existing storage facility screening on the eastern portion of the OGP site minimally filter views of the site. In this area of SR-76, motorists' attention tends to be drawn to the roadway due to the various curves along this stretch of highway rather than eastward toward the project site, but the prominent and striking upper portions of the power plant structures and noise walls would draw viewers' attention toward the site momentarily. Existing visual quality in the vicinity, characterized by views of the hillsides and ridgelines, is moderate. Viewer concern is also considered moderate due to the scenic quality of this portion of this state route. This roadway is not designated as a scenic highway in the San Diego County General Plan Circulation Element.

Approximately 9439 vehicles per day use SR-76. About half of these vehicles would be eastbound; therefore the number of viewers will be moderately low. Their duration of view will be moderately low, from 10 to 20 seconds, because the motorist will be focused on maneuvering the various curves in the highway.

The overall visual sensitivity for motorists is considered moderately low from KOP 1. This assessment is the result of the moderately low visual quality, moderate viewer concern, and moderate overall viewer concern.

Visual Change

As depicted in **Visual Resources Figure 3B**, the project would be clearly seen from this segment of the viewshed for eastbound motorist. From some viewpoints, such as this one, the project would be seen with minimal filtering by existing landscaping; from other segments of SR-76, the project would be partially screened by tree canopy, with the upper portions of the exhaust stacks, heat recovery steam generators (HRSGs) and intake structures visible above the canopy. In either case, the project would introduce contrasting elements of vertical and rectilinear form and line, light and contrastive coloring in relation to the visual foreground of natural grasses, resulting in a moderate level of contrast.

The applicant shows in their photo simulations and architectural rendering that the exteriors of major project structures would be treated with an earth tone finish intended to optimize its visual integration with the hillsides in the background. (**Visual Resources Figure 3B**).

Staff has proposed Condition of Certification **VIS-1** which requires that all project features be colored to blend in with the existing landscape to the greatest extent feasible in accordance with a Surface Treatment Plan that would be approved by the Compliance Project Manager (CPM).

The photo simulation of the project structures shows the proportionate size relationship to other manmade and natural elements. The project would occupy a small portion of

the total field-of-view of KOP 1. However, the structures would visually appear dominant when compared to other elements (storage building structures) in the KOP view. The overall visual scale of the structures as simulated in the KOP 1 viewshed is considered to be moderate.

Overall visual dominance of the project would remain visually subordinate to the hillsides in the background. The vertical form and line of stacks and HRSGs would silhouette against the hillside to a degree, increasing dominance and attracting attention to a moderate degree.

The project would not block high quality or scenic views from key viewpoints in this general area. Vertical features would not intrude into the sky, but remain visually subordinate.

Due to the moderate level of contrast, subordinate visual dominance, and low view blockage, overall visual change due to structures would be low to moderate.

Impact Significance – In the context of the setting's moderate visual sensitivity, and the moderate level of project visual change, the project's visual impact at KOP 1 would be adverse, but less-than-significant.

Staff-Recommended Mitigation- Reduction of the structure's color contrast would be an important factor in reducing overall project contrast and dominance from this and other KOPs. Staff recommends adoption of Condition of Certification **VIS-1**, painting of all project structures to ensure the lowest feasible color contrast. In this instance, a darker color more closely matching the color value of the surrounding hills would reduce color and overall contrast.

Additional screening of the facility with in-fill perimeter landscape plantings would further reduce project line and form contrast. Staff recommends Condition of Certification **VIS-2**, Perimeter Landscape Screening and Replacement Planting.

Residual Impact Significance After Mitigation with Staff-Recommended Measures- With staff recommended measures, the adverse visual impact generated by the proposed project can be minimized for the life of the project.

KOP 2– View taken from SR-76, approximately 500 feet east of the Project Site

Visual Resources Figures 4A through 4D represents the view from SR-76, approximately 500 feet east of the project site. This view, looks west across SR-76 from a private driveway. The citrus orchard where the site is located can be seen across the roadway, along with the steep hillsides west of the site are vegetated with sage scrub and chaparral habitat. ***In addition, Figures 4C and 4D provide a landscape simulation of native plants and trees, and their effectiveness for screening of the project at ten years and twenty years after construction.***

Visual Sensitivity

As similar to KOP 1, motorists on SR-76 have the same views of the rural countryside. Viewer exposure to the project site, which occupies the visual foreground of the roadway to the west, is moderate. The viewers along SR-76 are generally local residents and motorists traveling west to Interstate 15.

Because of the particular angle of this view, the project appears well-screened by the existing tall oak tree canopy and scattered trees and shrubs currently on the project site. This existing oak tree screening and scattered trees nearly equals the height of the proposed OGP structures and effectively screens the greater part of the project. As the viewer moves closer to the site, the effectiveness of the foreground screening increases and the plant moves out of the 45 degree cone of vision.

Form, line, and overall contrast of the protruding stacks in this view are low. However, from views from the SR-76 farther to the west, the structures would not be screened by the tall canopy, and overall form, line and color contrast could be moderate.

From KOP 2, visual dominance of the OGP structures would be subordinate to the hillsides and generally weak. As motorists continue west along SR-76 the power plant moves out of the 45 degree cone of vision, and would no longer be visible to the viewer, therefore dominance of the power plant structures would be negligible.

The intervening terrain and vegetation along SR-76 near the project site and the low shrub and existing storage facility screening on the eastern portion of the OGP site minimally filter views of the site. In this area, motorists' attention tends to be drawn to the roadway due to the various curves along this stretch of highway rather than eastward toward the project site, but the prominent and striking upper portions of the power plant structures and noise walls would draw viewers' attention toward the site momentarily. Existing visual quality in the vicinity, characterized by views of the hillsides and ridgelines, is moderate. Viewer concern is also considered moderate due to the scenic quality of this portion of this state route.

Approximately 9,439 vehicles per day use SR-76. About half of these vehicles would be westbound; therefore the number of viewers will be moderate. However their duration of view will be moderately low from 10 to 20 seconds, because the motorist will be focused on maneuvering the various curves in the highway.

The overall visual sensitivity for motorist is considered low to moderate from KOP 2. This assessment is the result of the moderately low visual quality, moderate viewer concern, and moderate overall viewer concern.

Visual Change

As depicted in **Visual Resources Figure 4B**, the project would introduce elements of vertical and rectilinear form and line contrast, silhouetted against the backdrop of the surrounding hills. It would also present light, contrastive coloring in relation to the dark visual foreground of natural vegetation of low profile native shrubs on the hillsides, resulting in a moderately low level of contrast.

The project would attract viewers' attention due to its contrastive, vertical form and industrial character. It would remain visually subordinate to the hillsides within the same view, but would also compound the industrial character of this view. Overall dominance would be moderate (co-dominant).

The project would not block scenic views from vantage points in this general area. Vertical features would not intrude into the sky and would not alter the existing tree canopy.

Overall visual change would thus be moderate.

Impact Significance – In the context of the setting's moderate visual sensitivity, and the moderate level of project visual change, the project's visual impact at KOP3 would be adverse, but less-than-significant.

Staff-Recommended Mitigation- Staff recommends Condition of Certification **VIS-1**, painting of all project structures to ensure feasible color contrast with the surrounding landscape. In this instance, an earth tone color more closely matching the color value of the surrounding foreground hillsides would reduce color and overall contrast against the hillsides. Staff also recommends Condition of Certification **VIS-2**, which provides additional perimeter landscape screening, and replacement planting to enhance screening of tall project features in the long term. In this case, additional tree screening extending farther south on the eastern berm along SR-76 would be important in achieving long-term screening from views in this portion of the SR-76.

Residual Impact Significance After Mitigation with Staff-Recommended Measures - With staff-recommended conditions, overall contrast would be reduced to a low level, a less than significant impact, in the long term due to maturation of recommended in-fill landscaping.

KOP 3 – View from hillside overlooking Project Site

Visual Resources Figures 5A through 5D depict the views of the project site from the slopes to the northeast. This view is typical of elevated views from the relatively limited number of residences (3) on the northeast side of the hillside with unobstructed views of the project site. These viewers represent the only residents with substantial views of the project. ***In addition, Figures 5C and 5D provide a landscape simulation of native plants and trees, and their effectiveness for screening of the project at ten years and twenty years after construction.***

Visual Sensitivity

Residents in general are considered to have potentially high levels of viewer concern due to the long periods of viewing time, typically high levels of concern for their place of residence, and concern with potential effects on property values. Those residents most likely to experience visual impact would be a limited number of viewers whose views of the site are not obstructed by other homes, terrain, or trees. These views are from predominantly elevated positions on the hillsides facing the site, within a mid-ground (1/2-mile) of the project site. Visual exposure to the project site is considered moderate, mediated by limited viewer numbers, distance from the project site, and screening at the site. Existing visual quality for potentially affected residential viewers depends on

location and the presence of scenic views, but is predominantly moderately high, since those with views of the site are also those with elevated views of former aggregate pits and the surrounding hills and valley in the distance.

Overall visual sensitivity of this viewer group is thus moderate to high.

Visual Change

As depicted in **Visual Resources Figure 5B**, the vertical and rectilinear form and line of the power plant would contrast with the irregular silhouette of the foreground hills, as would the marked color contrast of the project as shown. Overall, visual contrast at these distances would be moderate.

Visual dominance would be low to moderate. Although dominance is amplified by the various hills and sky lining, the residential viewers' attention to the project would be visually subordinate to the much larger and more prominent hills foreground and background that is shown within the view. The new OGP features, however, would increase the portion of the view with industrial character. Overall, visual change would be moderate**.**

Impact Significance – In the context of moderate overall viewer sensitivity, project impacts could potentially be significant from the KOP 3 viewpoint.

Staff-Recommended Mitigation- Staff recommends Condition of Certification **VIS-1**, painting of all project features colored to blend in with the existing landscape to the greatest extent feasible in accordance with a Surface Treatment Plan that would be approved by the CPM.

Also, staff recommends Condition of Certification **VIS-2**, which requires additional perimeter landscape screening, and replacement planting to enhance screening of tall project features in the long term. In this case, in-fill planting of trees, and additional tree and shrubs screening around the perimeter of the project site would be important in achieving long term screening from views in this portion of the lagoon.

Residual Impact Significance After Mitigation with Staff-Recommended Measures- With staff recommended measures; the adverse visual impact generated by the proposed project can be minimized for the life of the project.

<u>Overall Project Operation Impacts on Existing Visual Character or Quality</u>

Project operation impacts from all identified KOPs on the existing visual character and quality of the setting would be less than significant with project owner - and staff-recommended color mitigation and conditions of certification (Condition of Certification **VIS-1**), staff-and project owner -recommended perimeter landscape screening (Condition of Certification **VIS-2**), and project owner -and staff-recommended lighting mitigation (Condition of Certification **VIS-3**). With these measures, the impacts from project at operation would not substantially degrade the existing visual character or quality of the site and its surroundings, as perceived by sensitive receptors in the project viewshed.

LINEARS

Transmission Line–Gas Pipeline – As discussed earlier in this analysis, both the transmission line and natural gas pipeline would be constructed underground in a common trench. The construction activities would create a temporary visual disturbance along Pala del Norte Road and SR-76. No long-term impacts would occur as a result of the pipeline and transmission line and temporary impacts from construction activities are discussed above, under Construction Impacts. No visual impacts would be anticipated.

LIGHT OR GLARE

"Would the project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?"

The proposed project during operation has the potential to introduce light offsite to surrounding properties, and up-lighting to the nighttime sky. If bright exterior lights were not hooded, and lights not directed onsite they could introduce significant light or glare to the vicinity.

Project construction lighting would occur between 7:00 PM and 7:00 AM for up to six months. Some construction activities may take place 24 hours a day, 7 days a week.

According to the AFC Project Description, night lighting would be directed downward and would be down-shielded or capped to reduce glare and light trespass. Where lighting is not required for normal operation, safety or security, switches or photocells would be provided to allow these areas to remain dark except as needed (OGP 2008a, pg. 6.13-A-12). To the extent possible, night construction lighting would be pointed toward the center of the site.

With the effective implementation of the applicant's proposed light trespass mitigation measures as described in the AFC, the project's construction and operation-related lighting impacts in the context of the existing lighting are anticipated meet the County night light ordinance requirements for "Zone A" areas. With adequate screening and shielding, proposed new lighting would remain subordinate to the surrounding area. Staff recommends Condition of Certification **VIS-4** to ensure full compliance and verification of night lighting measures.

Impact of Cooling Tower and Combustion Exhaust Stack Plumes

The proposed OGP would use four simple-cycle LM 6000 turbines that would produce exhaust gas with exit temperatures ranging from 710F to 859F. Given these high exhaust temperatures, visible plumes would only occur at low ambient temperatures or high relative humidity. Since the OGP is a peaker facility it would normally operate during the warmer (six) months of the year. Therefore, visible plumes would not occur during normal plant operation.

Under certain weather conditions, visible water vapor plumes would emanate from the four-cell cooling tower associated with the power plant's inlet air chiller. Because water vapor plumes are generally associated with heavy industrial land uses, they tend to be

regarded negatively by sensitive observers and as such could have an adverse effect on visual resources in the vicinity of the project.

The severity of the impacts created by the project's visible plumes depends on several factors, including the frequency, duration, and physical size of the plumes, the sensitivity of the viewers who will see the plumes, the distance between the plumes and the viewers, the visual quality of the existing viewshed, and whether any scenic landscape features would be blocked by the plumes.

Modeling Analysis

A visible water vapor plume frequency of 20% of seasonal (November through April), daylight, no rain/fog, high visual contrast (i.e. "clear") hours is used to determine potential plume impact significance. If it is determined that the seasonal, daylight, clear hour plume frequency is greater than 20%, plume dimensions are calculated, and a significance analysis of the plumes is included as part of the Visual Resources impact analysis.

There is the potential for visible water vapor plumes to be produced from the project's chiller cooling tower exhaust. However, due to: 1) the plant capacity operating limitations proposed by the applicant; and 2) more importantly the limited operation of the chiller, which will not operate during low temperatures when plumes are most likely to be formed, the potential for visual plumes for the proposed OGP's cooling tower will be very limited and will not occur greater than staff's initial screening significance criteria of 20% of seasonal daylight clear hours. Staff used the CSVP model to assess the cooling tower's plume potential and has determined that any plumes that occur would be very small. Small and infrequent water vapor plumes would not significantly impact the visual resources of the project area.

There is no potential for visible water vapor plumes to be produced from the simple-cycle gas turbine exhausts. The combination of the very high exhaust temperature and relatively low exhaust water content make visible plume formation impossible under the range of ambient conditions normally experienced in area of Pala (Aspen 2008).

CUMULATIVE IMPACTS AND MITIGATION

As defined in Section 15355 of the CEQA Guidelines (California Code of Regulations, Title 14), a cumulative impact is created as a result of the combination of the project under consideration together with other existing or reasonably foreseeable projects causing related impacts. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time. In other words, while any one project may not create a significant impact to visual resources, the combination of the new project with all existing or planned projects in an area may create significant impacts. A significant cumulative impact would depend on the degree to which (1) the viewshed is altered; (2) view of a scenic resource is impaired; or (3) visual quality is diminished.

The proposed OGP would be built within the unincorporated community of Pala in San Diego County, within an expanse of open space with scattered residences. There is no

identified scenic resource or vista in the KOP 1, KOP 2 and KOP 3 viewsheds that would be disrupted if the project were constructed.

While project-related nighttime light and daytime glare impacts of the OGP would be mitigated to a level that would be less than significant, existing light and glare levels in the vicinity of the project would increase cumulatively as a result of the project and, existing and planned land uses. Light and glare impacts generated by these projects are not anticipated to be cumulatively considerable if the project's impacts are mitigated according to the conditions of certification.

The OGP site would introduce to the KOP 1, KOP 2, and KOP 3 viewshed publicly visible structures that are industrial in nature to an area that is currently undeveloped with no plans for large-scale projects anticipated in the immediate future. San Diego County has slated this area for future growth in the county's general plan. There are ongoing discussions on housing projects planned along SR-76 near the project site, under preliminary review by the county staff at this time. Please see the **LAND USE** section for future growth discussion. The view of the visible power plant structures would be visually noticeable but would not be so great as to constitute a substantial degradation of the existing visual setting. The OGP proposal in combination with existing and planned projects (expansion of the Pala and Pauma Casinos) would generate a less than significant cumulative visual effect to the KOP 1, KOP 2, and KOP 3 viewsheds.

The OGP is coordinating its efforts with the surrounding owners to ensure that the interests and needs of the development plans and projects in and around the surrounding area are met. The proposed expansion of the Pala Casino Expansion and the proposed Prominence at Pala project represents substantial changes to the undeveloped land in the area. However, because they represent the implementation of planned uses, these changes are not considered significant adverse visual impacts and the project's cumulative visual impacts are considered less than significant.

With staff-recommended Condition of Certification **VIS-2** and project owner-proposed landscape plantings on the south- and west-facing berms, overall impacts of the project to the traveling public would be less than significant, declining over time with landscape maturity.

COMPLIANCE WITH LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Visual Resources Table 3 provides an analysis of the applicable LORS pertaining to aesthetics or preservation and protection of sensitive visual resources relevant to the proposed project. Conditions of certification are proposed to make the project conform to a LORS where appropriate.

Visual Resources Table 2
Proposed Project's Consistency with
Local LORS Applicable to Visual Resources

LORS		Consistency Determination	Basis for Consistency
Source	**Policy and Strategy Descriptions**		
Federal			
National Route Preservation Bill			
Transportation Equity Act for the 21st Century of 1998, and Safe, Accountable, Flexible, and Efficient Transportation Equity Act of 2005.	Involves federal managed lands, and recognized National Scenic Byway or All-American Road within its vicinity.	YES	The project site does not involve federal managed lands, nor a recognized National Scenic Byway or All-American Road within its vicinity.
State			
California Streets and Highways Code, Sections 260 through 263 – Scenic Highways	Ensures the protection of highway corridors that reflect the State's natural scenic beauty.	YES	Not applicable: SR-76 has not been designated as an official State scenic highway.
Local			
San Diego County			
General Plan-Land Use Element	Encourages visual integration of projects of differing types or densities through the use of building setbacks, landscaped buffers, or other design features. Ensures that design reflects concerns about the preservation of viewsheds.	YES	The Orange Grove project is consistent with the City's zoning and land use policies (see **LAND USE** section) and the project is consistent with the City's Land Use Map.
Circulation/Scenic Highways Element	Provides the San Diego Scenic Corridor Guidelines, designated corridors and streets.	YES	The project site is located along SR 76, and this stretch is not listed as a scenic route.
County of San Diego Zoning Ordinance Part 4 and 6, Sec. 4000	Provides site review requirements, and establishes performance standards for development projects including architectural design, landscaping, and outdoor storage. Requires that architectural design of structures and their materials and colors are visually harmonious with surrounding development and natural land forms.	YES AS CONDITIONED	The project will be constructed to meet these standards and requirements. The detailed plans will be reviewed by the Chief Building Official and will be directed towards assuring that the design meets the county requirements.
Section 4000 and Zone A Light Pollution Code		YES AS CONDITIONED	Project lighting will be designed to comply with the Light Pollution Code for Zone A.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

None received at this time.

CONCLUSIONS

The visual analysis focused on two main issues: (1) would construction and operation of the project cause an aesthetic impact under CEQA; and (2) would the project comply with applicable local LORS pertaining to aesthetics or preservation and protection of sensitive visual resources.

The construction and operation of the Orange Grove Project as proposed, with the effective implementation of the applicant's proposed design measures and staff's recommended conditions of certification (below) would ensure that visual impacts generated by the project are less than significant, and ensure that the project complies with all applicable LORS regarding visual resources.

The project, with all proposed Conditions of Certification would not have a substantial adverse effect on an identified scenic vista; on a scenic resource; would not substantially degrade the existing visual character or quality of the site and its surroundings; and would not create a new source of substantial light or glare that would adversely affect day or nighttime views in the area. The project with recommended mitigation would thus not cause a significant aesthetic impact under CEQA. Staff concludes that the OGP would conform with applicable aesthetics-related LORS.

PROPOSED CONDITIONS OF CERTIFICATION

SURFACE TREATMENT OF PROJECT STRUCTURES AND BUILDINGS

VIS-1 The project owner shall treat the surfaces of all project structures and buildings visible to the public such that a) their colors minimize visual intrusion and contrast by blending with the landscape; b) their colors and finishes do not create excessive glare; and c) their colors and finishes are consistent with local policies and ordinances. Surface color treatment shall include painting of HRSGs, turbine inlet filters, and other features in an earth tone color and value to match the surrounding hillsides.

The project owner shall submit for CPM review and approval, a specific surface treatment plan that will satisfy these requirements. The treatment plan shall include:

1. A description of the overall rationale for the proposed surface treatment, including the selection of the proposed color(s) and finishes;

2. A list of each major project structure, building, tank, pipe, and wall; and fencing, specifying the color(s) and finish proposed for each. Colors must be identified by vendor, name, and number; or according to a universal designation system;

3. One set of 11” x 17” color photo simulations at life size scale, of the treatment proposed for use on project structures, including structures treated during manufacture, from a representative point of view (Key Observation Point 1-location shown on Visual Resources Figure 1 of the Staff Assessment);

4. A specific schedule for completion of the treatment; and

5. A procedure to ensure proper treatment maintenance for the life of the project.

The project owner shall not specify to the vendors the treatment of any buildings or structures treated during manufacture, or perform the final treatment on any buildings or structures treated in the field, until the project owner receives notification of approval of the treatment plan by the CPM. Subsequent modifications to the treatment plan are prohibited without CPM approval.

Verification: At least 90 days prior to specifying to the vendor the colors and finishes of the first structures or buildings that are surface treated during manufacture, the project owner shall submit the proposed treatment plan to the CPM for review and approval and simultaneously to the County of San Diego or responsible jurisdiction for review and comment.

If the CPM determines that the plan requires revision, the project owner shall provide to the CPM a plan with the specified revision(s) for review and approval by the CPM before any treatment is applied. Any modifications to the treatment plan must be submitted to the CPM for review and approval.

Prior to the start of commercial operation, the project owner shall notify the CPM that surface treatment of all listed structures and buildings has been completed and are ready for inspection and shall submit one set of electronic color photographs from the same key observation points identified in (d) above.

The project owner shall provide a status report regarding surface treatment maintenance in the Annual Compliance Report. The report shall specify a): the condition of the surfaces of all structures and buildings at the end of the reporting year; b) maintenance activities that occurred during the reporting year; and c) the schedule of maintenance activities for the next year.

ADDITIONAL PERIMETER LANDSCAPE SCREENING

VIS-2 The project owner shall provide landscaping that reduces the visibility of the power plant structures in accordance with local policies. Englemann oaks and other vegetation consisting of informal groupings of native shrubs shall be strategically placed around the facility boundaries. The objective shall be to create landscape screening of sufficient density and height to screen the power plant structures to the greatest feasible extent within the shortest feasible time; and to provide timely replacement for aging or diseased tree specimens on site in order to avoid future loss of existing visual screening.

The project owner shall submit to the CPM for review and approval and simultaneously to the County of San Diego for review and comment a landscaping plan whose proper implementation will satisfy these requirements. The plan shall include:

1. A detailed landscape, grading, and irrigation plan, at a reasonable scale. The plan shall demonstrate how the requirements stated above shall be met. The plan shall provide a detailed installation schedule demonstrating installation of as much of the landscaping as early in the construction process as is feasible in coordination with project construction.

2. A list (prepared by a qualified professional arborist familiar with local growing conditions) of proposed species, specifying installation sizes, growth rates, expected time to maturity, expected size at five years and at maturity, spacing, number, availability, and a discussion of the suitability of the plants for the site conditions and mitigation objectives, with the objective of providing the widest possible range of species from which to choose;

3. Maintenance procedures, including any needed irrigation and a plan for routine annual or semi-annual debris removal for the life of the project; and

4. A procedure for monitoring for and replacement of unsuccessful plantings for the life of the project.

The plan shall not be implemented until the project owner receives final approval from the CPM.

Verification: The landscaping plan shall be submitted to the CPM for review and approval and simultaneously to the County of San Diego for review and comment at least 90 days prior to installation.

If the CPM determines that the plan requires revision, the project owner shall provide to the CPM and simultaneously to the County of San Diego a revised plan for review and approval by the CPM.

The planting must occur during the first optimal planting season following site mobilization. The project owner shall simultaneously notify the CPM and the County of San Diego within seven days after completing installation of the landscaping, that the landscaping is ready for inspection.

The project owner shall report landscape maintenance activities, including replacement of dead or dying vegetation, for the previous year of operation in each Annual Compliance Report.

TEMPORARY AND PERMANENT EXTERIOR LIGHTING

VIS-3 To the extent feasible, consistent with safety and security considerations, the project owner shall design and install all permanent exterior lighting such that a) lamps and reflectors are not visible from beyond the project site, including any off-site security buffer areas; b) lighting does not cause excessive

reflected glare; c) direct lighting does not illuminate the nighttime sky; d) illumination of the project and its immediate vicinity is minimized, and e) the plan complies with local policies and ordinances.

The project owner shall submit to the CPM for review and approval and simultaneously to the County of San Diego for review and comment a lighting mitigation plan that includes the following:

1. Location and direction of light fixtures shall take the lighting mitigation requirements into account;

2. Lighting design shall consider setbacks of project features from the site boundary to aid in satisfying the lighting mitigation requirements;

3. Lighting shall incorporate fixture hoods/shielding, with light directed downward or toward the area to be illuminated;

4. Light fixtures that are visible from beyond the project boundary shall have cutoff angles that are sufficient to prevent lamps and reflectors from being visible beyond the project boundary, except where necessary for security;

5. All lighting shall be of minimum necessary brightness consistent with operational safety and security; and

6. Lights in high illumination areas not occupied on a continuous basis (such as maintenance platforms) shall have (in addition to hoods) switches, timer switches, or motion detectors so that the lights operate only when the area is occupied.

Verification: At least 90 days prior to ordering any permanent exterior lighting, the project owner shall contact the CPM to discuss the documentation required in the lighting mitigation plan.

At least 60 days prior to ordering any permanent exterior lighting, the project owner shall submit to the CPM for review and approval and simultaneously to the County of San Diego for review and comment a lighting mitigation plan.

If the CPM determines that the plan requires revision, the project owner shall provide to the CPM a revised plan for review and approval by the CPM.

The project owner shall not order any exterior lighting until receiving CPM approval of the lighting mitigation plan.

Prior to commercial operation, the project owner shall notify the CPM that the lighting has been completed and is ready for inspection. If after inspection the CPM notifies the project owner that modifications to the lighting are needed, within 30 days of receiving that notification the project owner shall implement the modifications and notify the CPM that the modifications have been completed and are ready for inspection.

Within 48 hours of receiving a lighting complaint, the project owner shall provide the CPM with a complaint resolution form report as specified in the Compliance General

Conditions including a proposal to resolve the complaint, and a schedule for implementation. The project owner shall notify the CPM within 48 hours after completing implementation of the proposal. A copy of the complaint resolution form report shall be submitted to the CPM within 30 days.

REFERENCES

Caltrans (California Department of Transportation), 2006. Scenic Highway Master Plan.

Federal Highway Administration (FHWA), 1988. Visual Impact Assessment for Highway Projects.

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APPENDIX VR-1

ENERGY COMMISSION VISUAL RESOURCE ANALYSIS EVALUATION CRITERIA

Energy Commission staff conducts a visual resource analysis according to Appendix G, "Environmental Checklist Form—Aesthetics," California Environmental Quality Act (CEQA). The CEQA analysis requires that commission staff make a determination of impact ranging from "Adverse and Significant" to "Not Significant."

Staff's analysis is based on Key Observation Points or KOPs. KOPs are photographs of locations within the project area that are highly visible to the public — for example, travel routes; recreational and residential areas; and bodies of water as well as other scenic and historic resources.

Those photographs are taken to indicate existing conditions without the project and then modified to include a simulation of the project. Consequently, staff has a visual representation of the viewshed before and after a project is introduced and makes its analysis accordingly. Information about that analytical process follows.

Visual Resource Analysis Without Project

When analyzing KOPs of existing conditions without the project, staff considers the following conditions: visual quality, viewer concern, visibility, number of viewers, and duration of view. Those conditions are then factored into an overall rating of viewer exposure and viewer sensitivity. Information about each condition and rating follows.

Visual Quality

An expression of the visual impression or appeal of a given landscape and the associated public value attributed to the resource. Visual quality is rated from *high* to *low*. A high rating is generally reserved for landscapes viewers might describe as picture-perfect.

Landscapes rated high generally are memorable because of the way the components combine in a visual pattern. In addition, those landscapes are free from encroaching elements, thus retaining their visual integrity. Finally, landscapes with high visual quality are visually coherent and harmonious when each element is considered as part of the whole. On the contrary, landscapes rated *low* are often dominated by visually discordant human alterations.

Viewer Concern

Viewer concern represents the reaction of a viewer to visible changes in the viewshed — an area of land visible from a fixed vantage point. For example, viewers have a high expectation for views formally designated as a scenic area or travel corridor as well as for recreational and residential areas. Viewers generally expect that those views will be preserved. Travelers on highways and roads, including those in agricultural areas, are generally considered to have moderate viewer concerns and expectations.

However, viewers tend to have low-to-moderate viewer concern when viewing commercial buildings. And industrial uses typically have the lowest viewer concern. Regardless, the level of concern could be lower if the existing landscape contains discordant elements. In addition, some areas of lower visual quality and degraded visual character may contain particular views of substantially higher visual quality or interest to the public.

Visibility

Visibility is a measure of how well an object can be seen. Visibility depends on the angle or direction of views; extent of visual screening; and topographical relationships between the object and existing homes, streets, or parks. In that sense, visibility is determined by considering any and all obstructions that may be in the sightline—trees and other vegetation; buildings; transmission poles or towers; general air quality conditions such as haze; and general weather conditions such as fog.

Number of Viewers

Number of viewers is a measure of the number of viewers per day who would have a view of the proposed project. *Number of viewers* is organized into the following categories: residential according to the number of residences; motorist according to the number of vehicles; and recreationists.

Duration of View

Duration of view is the amount of time to view the site. For example, a high or extended view of a project site is one reached across a distance in two minutes or longer. In contrast, a low or brief duration of view is reached in a short amount of time—generally less than ten seconds.

Viewer Exposure

Viewer exposure is a function of three elements previously listed, *visibility*, *number of viewers*, and *duration of view*. Viewer exposure can range from a *low* to *high*. A partially obscured and brief background view for a few motorists represents a low value; and unobstructed foreground view from a large number of residences represents a high value.

Visual Sensitivity

Visual sensitivity is comprised of three elements previous listed, *visual quality*, *viewer concern*, and *viewer exposure*. Viewer sensitivity tends to be higher for homeowners or people driving for pleasure or engaged in recreational activities and lower for people driving to and from work or as part of their work.

Visual Resource Analysis with Project

Visual resource analyses with photographic simulations of the project involve the elements of contrast, dominance, view blockage, and visual change. Information about each element follows.

Contrast

Contrast concerns the degree to which a project's visual characteristics or elements — form, line, color, and texture — differ from the same visual elements in the existing landscape. The degree of contrast can range from *low* to *high*. A landscape with forms, lines, colors, and textures similar to those of a proposed energy facility is more visually absorbent; that is, more capable of accepting those characteristics than a landscape in which those elements are absent.[1] Generally, visual absorption is inversely proportional to visual contrast.

Dominance

Dominance is a measure of (a) the proportion of the total field of view occupied by the field; (b) a feature's apparent size relative to other visible landscape features; and (c) the conspicuousness of the feature due to its location in the view.

A feature's level of dominance is lower in a panoramic setting than in an enclosed setting with a focus on the feature itself. A feature's level of dominance is higher if it is (1) near the center of the view; (2) elevated relative to the viewer; or (3) has the sky as a backdrop. As the distance between a viewer and a feature increases, its apparent size decreases; and consequently, its dominance decreases. The level of dominance ranges from *low* to *high*.

View Blockage

The extent to which any previously visible landscape features are blocked from view constitutes view disruption. The view is also disrupted when the continuity of the view is interrupted. When considering a project's features, higher quality landscape features can be disrupted by lower quality project features, thus resulting in adverse visual impacts. The degree of view disruption can range from *none* to *high*.

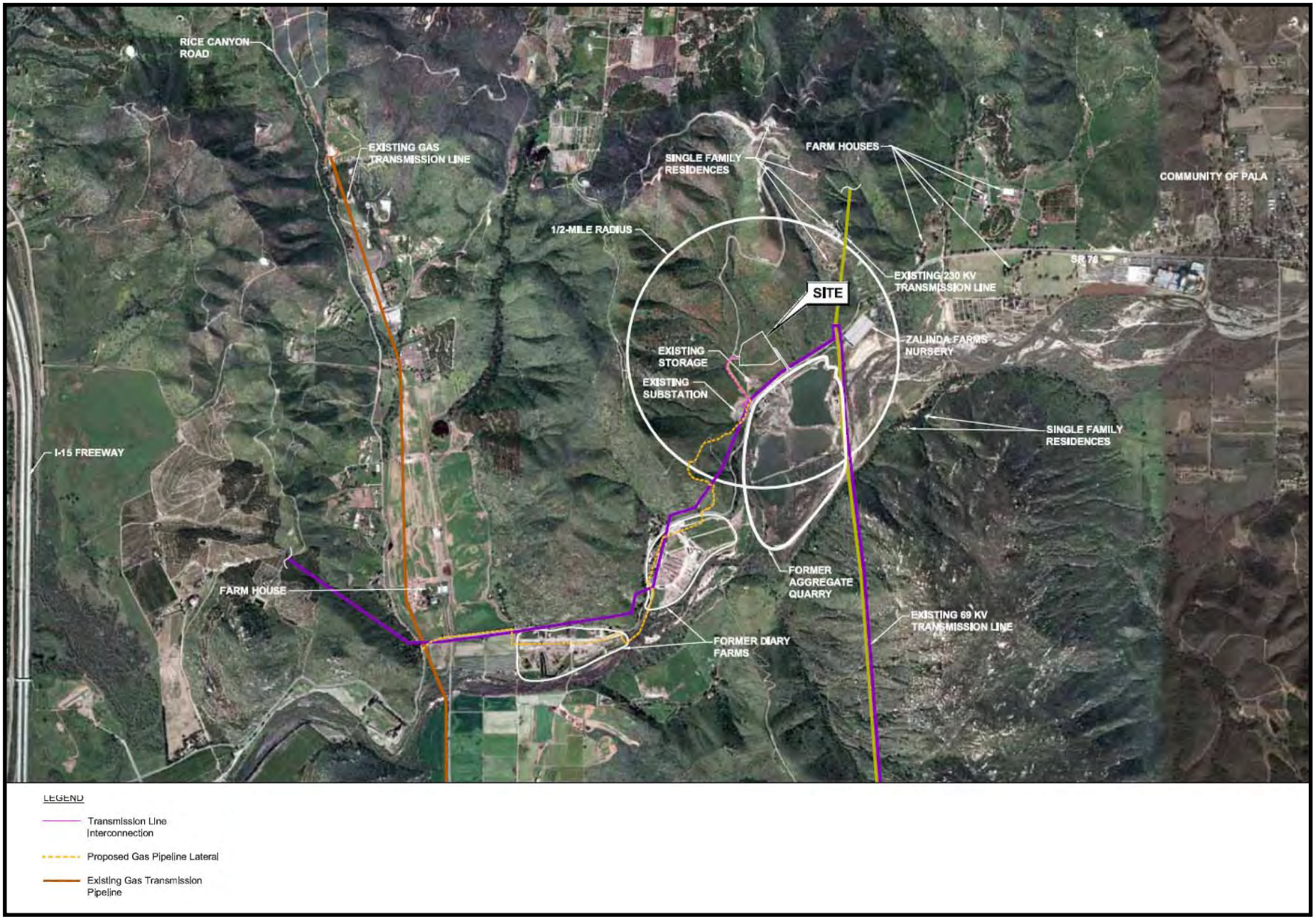
Visual Change

Visual change is a function of *contrast*, *dominance*, and *view disruption*. Generally, *contrast* and *dominance* contribute more to the degree of visual change than does *view disruption*.

[1] Typically, the Energy Commission does not consider texture in its visual analyses.

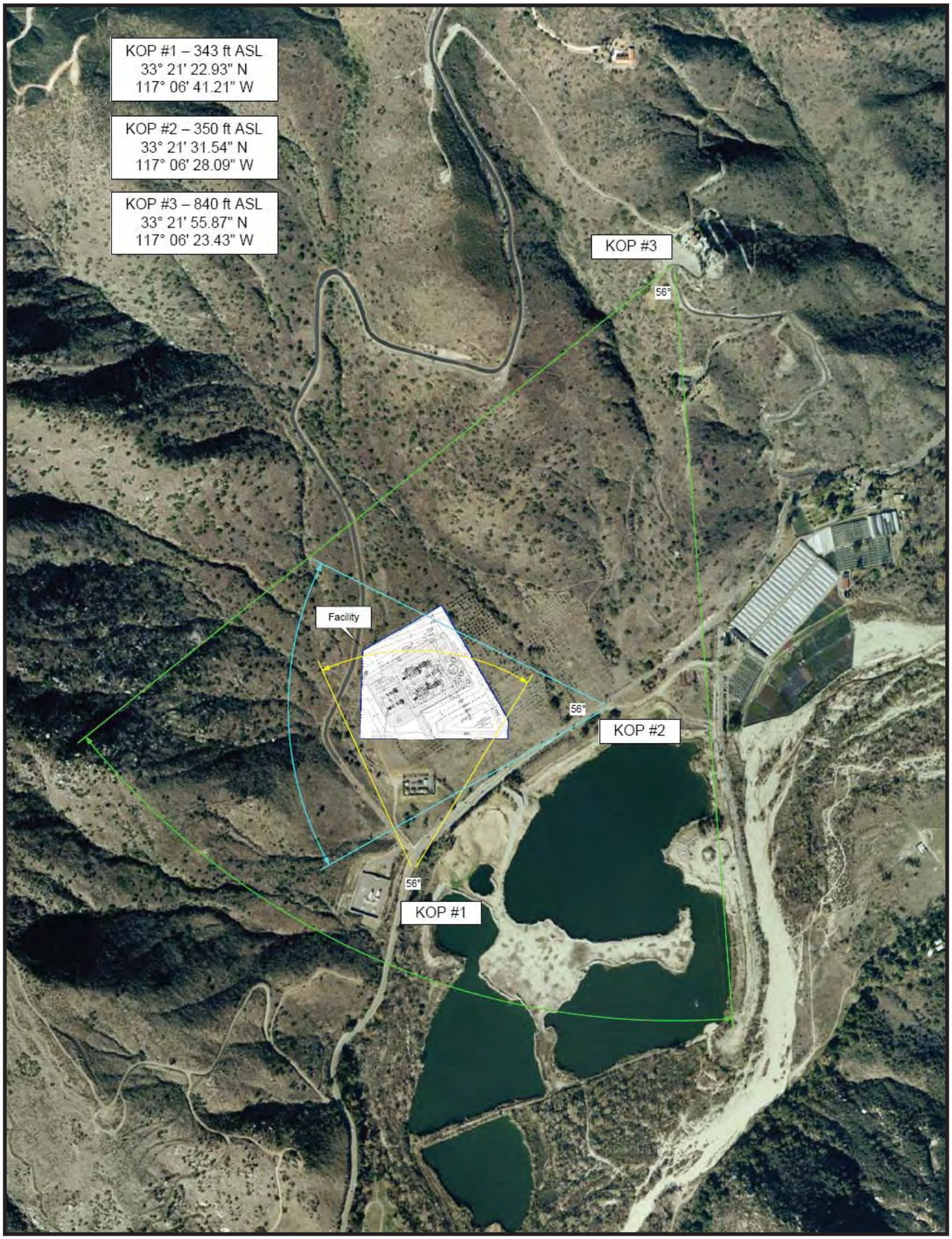
VISUAL RESOURCES - FIGURE 1

Orange Grove Project - Project Area Map



SOURCE: AFC Figure 6.13-A.2

VISUAL RESOURCES - FIGURE 2
Orange Grove Project - KOP Location Map



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION, NOVEMBER 2008
SOURCE: AFC Figure 6.13-A.3

VISUAL RESOURCES - FIGURE 3A

Orange Grove Project - KOP 1 Existing Condition

SOURCE: AFC Figure 6.13-A.4

VISUAL RESOURCES - FIGURE 3B

Orange Grove Project - KOP 1 Immediately After Construction

SOURCE: AFC Figure 6.13-A.8

VISUAL RESOURCES - FIGURE 3C

Orange Grove Project - KOP 1 Ten (10) Years After Construction

SOURCE: AFC Figure 6.13-A.9

VISUAL RESOURCES - FIGURE 3D

Orange Grove Project - KOP 1 Twenty (20) Years After Construction

SOURCE: AFC Figure 6.13-A.10

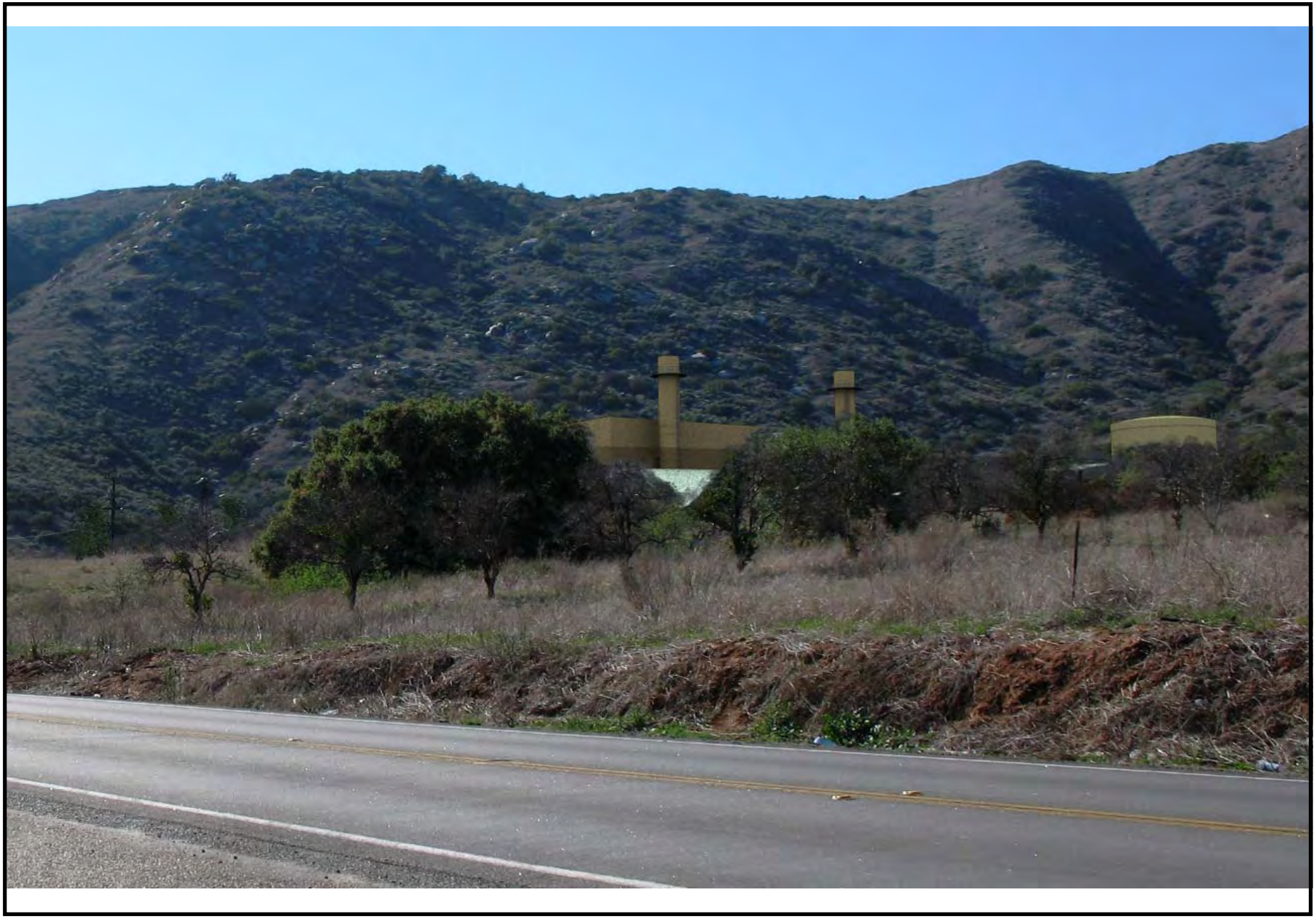
VISUAL RESOURCES - FIGURE 4A

Orange Grove Project - KOP 2 Existing Condition

SOURCE: AFC Figure 6.13-A.5

VISUAL RESOURCES - FIGURE 4B

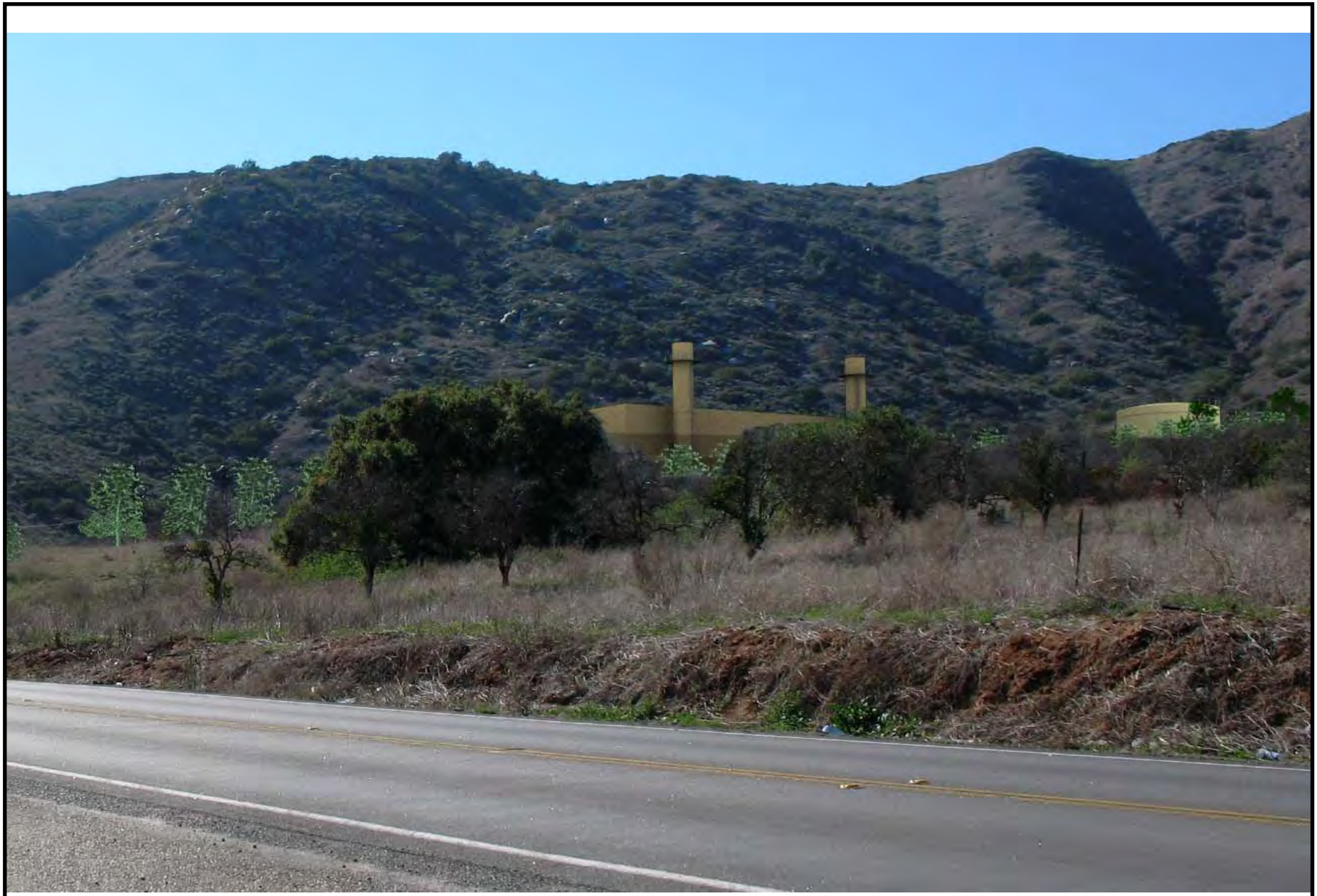
Orange Grove Project - KOP 2 Immediately After Construction



SOURCE: AFC Figure 6.13-A.11

VISUAL RESOURCES - FIGURE 4C

Orange Grove Project - KOP 2 Ten (10) Years After Construction



SOURCE: AFC Figure 6.13-A.12

VISUAL RESOURCES - FIGURE 4D

Orange Grove Project - KOP 2 Twenty (20) Years After Construction

SOURCE: AFC Figure 6.13-A.13

VISUAL RESOURCES - FIGURE 5A

Orange Grove Project - KOP 3 Existing Condition

SOURCE: AFC Figure 6.13-A.6

VISUAL RESOURCES - FIGURE 5B

Orange Grove Project - KOP 3 Immediately After Construction

SOURCE: AFC Figure 6.13-A.14

VISUAL RESOURCES - FIGURE 5C

Orange Grove Project - KOP 3 Ten (10) Years After Construction

SOURCE: AFC Figure 6.13-A.15

VISUAL RESOURCES - FIGURE 5D

Orange Grove Project - KOP 3 Twenty (20) Years After Construction

SOURCE: AFC Figure 6.13-A.16

WASTE MANAGEMENT

Testimony of Ellie Townsend-Hough

SUMMARY OF CONCLUSIONS

Management of the waste generated during construction and operation of the Orange Grove Project (OGP) would not result in any significant adverse impacts, and would comply with applicable waste management laws, ordinances, regulations, and standards, if the measures proposed in the Application for Certification (AFC) and staff's proposed conditions of certification are implemented.

INTRODUCTION

This Final Staff Assessment (FSA) presents an analysis of issues associated with wastes generated from the proposed construction and operation of the OGP. The technical scope of this analysis encompasses solid wastes existing onsite and those to be generated during facility construction and operation. Management and discharge of wastewater is addressed in the **SOIL AND WATER RESOURCES** section of this document. Additional information related to waste management may also be covered in the **WORKER SAFETY** and **HAZARDOUS MATERIALS MANAGEMENT** sections of this document.

The Energy Commission staff's objectives in conducting this waste management analysis are to ensure that:

- The management of project wastes would be in compliance with all applicable laws, ordinances, regulations, and standards (LORS). Compliance with LORS ensures that wastes generated during the construction and operation of the proposed project would be managed in an environmentally safe manner.
- The disposal of project wastes would not result in significant adverse impacts to existing waste disposal facilities.
- Upon project completion, the site is managed in such a way that project wastes and waste constituents would not pose a significant risk to humans or the environment.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

The following federal, state, and local environmental laws, ordinances, regulations and standards (LORS) have been established to ensure the safe and proper management of both solid and hazardous wastes in order to protect human health and the environment. Project compliance with the various LORS is a major component of staff's determination regarding the significance and acceptability of the OGP with respect to management of waste.

Waste Management Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable Law	Description
Federal	
Title 42, United States Code (U.S.C.), §§6901, et seq. Solid Waste Disposal Act of 1965 (as amended and revised by the Resource Conservation and Recovery Act of 1976, et al).	The Solid Waste Disposal Act, as amended and revised by the Resource Conservation and Recovery Act (RCRA) et al, establishes requirements for the management of solid wastes (including hazardous wastes), landfills, underground storage tanks, and certain medical wastes. The statute also addresses program administration, implementation and delegation to states, enforcement provisions and responsibilities, as well as research, training, and grant funding provisions. RCRA Subtitle C establishes provisions for the generation, storage, treatment, and disposal of hazardous waste, including requirements addressing: • Generator record keeping practices that identify quantities of hazardous wastes generated and their disposition; • Waste labeling practices and use of appropriate containers; • Use of a manifest when transporting wastes; • Submission of periodic reports to the United States Environmental Protection Agency (USEPA) or other authorized agency; and • Corrective action to remediate releases of hazardous waste and contamination associated with RCRA-regulated facilities. RCRA Subtitle D establishes provisions for the design and operation of solid waste landfills. RCRA is administered at the federal level by USEPA and its ten regional offices. The Pacific Southwest regional office (Region 9) implements USEPA programs in California, Nevada, Arizona, and Hawaii.
Title 42, U.S.C., §§ 9601, et seq. Comprehensive Environmental Response, Compensation and Liability Act	The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), also known as Superfund, establishes authority and funding mechanisms for cleanup of uncontrolled or abandoned hazardous waste sites, as well as cleanup of accidents, spills, or emergency releases of pollutants and contaminants into the environment. Among other things, the statute addresses: • Reporting requirements for releases of hazardous substances; • Requirements for remedial action at closed or abandoned hazardous waste sites, and brownfields; • Liability of persons responsible for releases of hazardous substances or waste; and • Requirements for property owners/potential buyers to conduct “all appropriate inquiries” into previous ownership and uses of the property to 1) determine if hazardous substances have been or may have been released at the site, and 2) establish that the owner/buyer did not cause or contribute to the release. A Phase I Environmental Site Assessment is commonly used to satisfy CERCLA “all appropriate inquiries” requirements.

Applicable Law	Description
Title 40, Code of Federal Regulations (CFR), Subchapter I – Solid Wastes.	These regulations were established by USEPA to implement the provisions of the Solid Waste Disposal Act and RCRA (described above). Among other things, the regulations establish the criteria for classification of solid waste disposal facilities (landfills), hazardous waste characteristic criteria and regulatory thresholds, hazardous waste generator requirements, and requirements for management of used oil and universal wastes. • Part 246 addresses source separation for materials recovery guidelines. • Part 257 addresses the criteria for classification of solid waste disposal facilities and practices. • Part 258 addresses the criteria for municipal solid waste landfills. • Parts 260 through 279 address management of hazardous wastes, used oil, and universal wastes (i.e., batteries, mercury-containing equipment, and lamps). USEPA implements the regulations at the federal level. However, California is an authorized state so the regulations are implemented by state agencies and authorized local agencies in lieu of USEPA.
Title 49, CFR, Parts 172 and 173. Hazardous Materials Regulations	U.S. Department of Transportation established standards for transport of hazardous materials and hazardous wastes. The standards include requirements for labeling, packaging, and shipping of hazardous materials and hazardous wastes, as well as training requirements for personnel completing shipping papers and manifests. Section 172.205 specifically addresses use and preparation of hazardous waste manifests in accordance with Title 40, CFR, section 262.20.
State	
California Health and Safety Code (HSC), Chapter 6.5, §25100, et seq. Hazardous Waste Control Act of 1972, as amended.	This California law creates the framework under which hazardous wastes must be managed in California. The law provides for the development of a state hazardous waste program that administers and implements the provisions of the federal RCRA program. It also provides for the designation of California-only hazardous wastes and development of standards (regulations) that are equal to or, in some cases, more stringent than federal requirements. The California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC) administers and implements the provisions of the law at the state level. Certified Unified Program Agencies (CUPAs) implement some elements of the law at the local level.

Applicable Law	Description
Title 22, California Code of Regulations (CCR), Division 4.5. Environmental Health Standards for the Management of Hazardous Waste	These regulations establish requirements for the management and disposal of hazardous waste in accordance with the provisions of the California Hazardous Waste Control Act and federal RCRA. As with the federal requirements, waste generators must determine if their wastes are hazardous according to specified characteristics or lists of wastes. Hazardous waste generators must obtain identification numbers, prepare manifests before transporting the waste off-site, and use only permitted treatment, storage, and disposal facilities. Generator standards also include requirements for record keeping, reporting, packaging, and labeling. Additionally, while not a federal requirement, California requires that hazardous waste be transported by registered hazardous waste transporters. The standards addressed by Title 22, CFR include: • Identification and Listing of Hazardous Waste (Chapter 11, §§66261.1, et seq.) • Standards Applicable to Generators of Hazardous Waste (Chapter 12, §§66262.10, et seq.) • Standards Applicable to Transporters of Hazardous Waste (Chapter 13, §§66263.10, et seq.) • Standards for Universal Waste Management (Chapter 23, §§66273.1, et seq.) • Standards for the Management of Used Oil (Chapter 29, §§66279.1, et seq.) • Requirements for Units and Facilities Deemed to Have a Permit by Rule (Chapter 45, §§67450.1, et seq.) The Title 22 regulations are established and enforced at the state level by DTSC. Some generator standards are also enforced at the local level by CUPAs.
HSC, Chapter 6.11 §§25404 – 25404.9 Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program)	The Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of the six environmental and emergency response programs listed below. • Aboveground Storage Tank Program • Business Plan Program • California Accidental Release Prevention (CalARP) Program • Hazardous Material Management Plan / Hazardous Material Inventory Statement Program • Hazardous Waste Generator / Tiered Permitting Program • Underground Storage Tank Program The state agencies responsible for these programs set the standards for their programs while local governments implement the standards. The local agencies implementing the Unified Program are known as Certified Unified Program Agencies (CUPAs). San Diego County Department of Environmental Health is the area CUPA. **Note:** The Waste Management analysis only considers application of the Hazardous Waste Generator/Tiered Permitting element of the Unified Program. Other elements of the Unified Program may be addressed in the Hazardous Materials and/or Worker Health and Safety analysis sections.

Applicable Law	Description
Title 27, CCR, Division 1, Subdivision 4, Chapter 1, §15100, et seq. Unified Hazardous Waste and Hazardous Materials Management Regulatory Program	While these regulations primarily address certification and implementation of the program by the local CUPAs, the regulations do contain specific reporting requirements for businesses. • Article 9 – Unified Program Standardized Forms and Formats (§§ 15400-15410). • Article 10 – Business Reporting to CUPAs (§§15600 – 15620).
Public Resources Code, Division 30, §40000, et seq. California Integrated Waste Management Act of 1989.	The California Integrated Waste Management Act of 1989 (as amended) establishes mandates and standards for management of solid waste. Among other things, the law includes provisions addressing solid waste source reduction and recycling, standards for design and construction of municipal landfills, and programs for county waste management plans and local implementation of solid waste requirements.
Title 14, CCR, Division 7, §17200, et seq. California Integrated Waste Management Board	These regulations further implement the provisions of the California Integrated Waste Management Act and set forth minimum standards for solid waste handling and disposal. The regulations include standards for solid waste management, as well as enforcement and program administration provisions. • Chapter 3 -- Minimum Standards for Solid Waste Handling and Disposal. • Chapter 3.5 – Standards for Handling and Disposal of Asbestos Containing Waste. • Chapter 7 – Special Waste Standards. • Chapter 8 – Used Oil Recycling Program. • Chapter 8.2 – Electronic Waste Recovery and Recycling
HSC, Division 20, Chapter 6.5, Article 11.9, §25244.12, et seq. Hazardous Waste Source Reduction and Management Review Act of 1989 (also known as SB 14).	This law was enacted to expand the State's hazardous waste source reduction activities. Among other things, it establishes hazardous waste source reduction review, planning, and reporting requirements for businesses that routinely generate more than 12,000 kilograms (~ 26,400 pounds) of hazardous waste in a designated reporting year. The review and planning elements are required to be done on a 4 year cycle, with a summary progress report due to DTSC every 4th year.
Title 22, CCR, §67100.1 et seq. Hazardous Waste Source Reduction and Management Review.	These regulations further clarify and implement the provisions of the Hazardous Waste Source Reduction and Management Review Act of 1989 (noted above). The regulations establish the specific review elements and reporting requirements to be completed by generators subject to the Act.

Applicable Law	Description
Local	
San Diego County Code of Regulatory Ordinances 9840 Sections 68.508 through 68.518	The County Code of Regulatory Ordinances relating to diversion of construction and demolition materials from landfill disposal.
San Diego County Integrated Waste Management Plan	Provides guidance for local management of solid waste and household hazardous waste (incorporates the County's Source Reduction and Recycling Elements, which detail means of reducing commercial and industrial sources of solid waste).
San Diego County Department of Environmental Health, Hazardous Material Division (HMD) various programs	HMD is the Certified Unified Program Agency (CUPA) for San Diego County that regulates and conducts inspections of businesses that handle hazardous materials, hazardous wastes, and/or have underground storage tanks. HMS programs include assistance with oversight on property re-development (i.e., brownfields); and voluntary or private oversight cleanup assistance.

SETTING

The proposed OGP is a 96 Megawatt (MW) natural gas-fired, simple cycle generating facility (OGE2008a, page 1-1). The simple cycle equipment will consist of two General Electric LM6000 combustion turbine generators, and associated support equipment. The facility will be located on an 8.5-acre parcel in an unincorporated area of rural north San Diego County, California. The proposed project site is on portions of the southwest ¼ of the southeast ¼ of Section 29 and the northwest ¼ of the northeast ¼ of Section 32, in Township 9 South, Range 2 West, San Bernardino Baseline and Meridian. The site is 5.0 miles east of the City of Fallbrook and approximately 2.0 miles west of the community of Pala (OGE2008a, page 1-3) the region is primarily rural, including agriculture, large plot residential, small communities, open space and large-scale commercial/industrial such as hotel/casino and mining operations. (OGE2008a, page 6.9-1).

The project is located within a 54-acre property owned by San Diego Gas & Electric (SDG&E). The project site is located on disturbed lands previously used as a citrus grove/orchard; The SDG&E Pala substation and a fenced SDG&E storage area are located on the parcel immediately south of the proposed site. (OGE2008a, page 2.1).

A 2.4-mile underground gas pipeline will be constructed to convey natural gas to OGP from an existing SDG&E gas transmission line. Also, a 0.3-mile underground electric transmission line interconnection will be constructed between the Site and the Pala substation. The utility lines parallel Pala Road (also known as State Route 76) in unincorporated San Diego County California. The pipeline route consists of 2.4 miles of roadway and undeveloped land, and less than an acre of storage yard which is part of a larger 54-acre parcel owned by SDG&E (TRC2008e Phase I ESA).

The construction and demolition associated with OGP will produce a variety of mixed nonhazardous wastes, such as orchard wood, scrap wood, metal, plastics, etc. Waste

will be recycled where practical and nonrecyclable waste will be deposited in a Class III landfill. The hazardous waste generated during this phase of the project will consist of electrical equipment, used oils, universal wastes, solvents, and empty hazardous waste materials. (OGE2008a, Section 6.14). Universal wastes are hazardous wastes that contain mercury, lead, cadmium, copper and other substances hazardous to human and environmental health. Examples of universal wastes are batteries, fluorescent tubes, and some electronic devices.

The proposed OGP would be a peaking power plant and would operate during times of very high electrical load or when baseload plants are not operating, or during emergency conditions. Operation and maintenance of the plant and associated facilities will generate a variety of wastes, including hazardous wastes. To control air emissions, the project's turbine units would use selective catalytic reduction and oxidation catalyst equipment and chemicals, which generate recyclable hazardous waste.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

This Waste Management analysis addresses: a) existing project site conditions and the potential for contamination associated with prior activities on or near the project site, and b) the impacts from the generation and management of wastes during project construction and operation.

A. For any site in California proposed for the construction of a power plant, the applicant must provide documentation about the nature of any potential or existing releases of hazardous substances or contamination at the site. If potential or existing releases or contamination at the site are identified, the significance of the release or contamination would be determined by site-specific factors, including, but not limited to: the amount and concentration of contaminants or contamination; the proposed use of the area where the contaminants/contamination is found; and any potential pathways for workers, the public, or sensitive species or environmental areas to be exposed to the contaminants. Any unmitigated contamination or releases of hazardous substances that pose a risk to human health or environmental receptors would be considered significant by Energy Commission staff.

   As a first step in documenting existing site conditions, the Energy Commission's power plant site certification regulations require that a Phase I Environmental Site Assessment (ESA) be prepared[1] and submitted as part of an application for certification. The Phase I ESA is conducted to identify any conditions indicative of releases and threatened releases of hazardous substances at the site and to identify any areas known to be contaminated on (or a source of contamination) or near the site.

   In general, the Phase I ESA uses a qualified Environmental Professional (EP) to conduct inquiries into past uses and ownership of the property, research hazardous

[1] Title 20, California Code of Regulations, Section 1704(c) and Appendix B, section (g) (12) (A). Note that the Phase I ESA must be prepared according to American Society for Testing and Materials protocol or an equivalent method agreed upon by the applicant and the Energy Commission staff.

substance releases and hazardous waste disposal at the site and within a certain distance of the site, and visually inspect the property, making observations about the potential for contamination and possible areas of concern. After conducting all necessary file reviews, interviews, and site observations, the EP then provides findings about the environmental conditions at the site. In addition, since the Phase I ESA does not include sampling or testing, the EP may also give an opinion about the potential need for any additional investigation. Additional investigation may be needed, for example, if there were significant gaps in the information available about the site, an ongoing release is suspected, or to confirm an existing environmental condition.

If additional investigation is needed to identify the extent of possible contamination, a Phase II ESA may be required. The Phase II ESA usually includes sampling and testing of potentially contaminated media to verify the level of contamination and the potential for remediation at the site.

In conducting its assessment of a proposed project, Energy Commission staff will review the project's Phase I ESA and work with the appropriate oversight agencies as necessary to determine if additional site characterization work is needed and if any mitigation is necessary at the site to ensure protection of human health and the environment from any hazardous substance releases or contamination identified.

B. Regarding the management of project-related wastes generated during construction and operation of the proposed project, staff reviews the applicant's proposed solid and hazardous waste management methods and determines if the methods proposed are consistent with the LORS identified for waste disposal and recycling. The federal, state, and local LORS represent a comprehensive regulatory system designed to protect human health and the environment from impacts associated with management of both non-hazardous and hazardous wastes. Absent any unusual circumstances, staff considers project compliance with LORS to be sufficient to ensure that no significant impacts would occur as a result of project waste management.

   Staff then reviews the capacity available at off-site treatment and disposal sites and determines whether or not the proposed power plant's waste would have a significant impact on the volume of waste a facility is permitted to accept. Staff uses a waste volume threshold equal to 1 percent of a disposal facility's remaining permitted capacity to determine if the impact from disposal of project wastes at a particular facility would be significant.

DIRECT/INDIRECT IMPACTS AND MITIGATION

Existing Site Conditions

A Phase I ESA of the proposed project site, dated June 6, 2008, was prepared by TRC in accordance with the American Society for Testing and Materials Standard Practice E 1527-00 for ESAs. The Phase I ESA is included as Appendix 6.14A in Volume III of the project AFC (OGE2008a, Appendix 6.14A).

The Phase I ESA conducted for the proposed OGP site did not identify any recognized environmental conditions (REC) associated with the proposed project site and linear facility corridors. A REC is the presence or likely presence of any hazardous substances or petroleum products on a property under the conditions that indicated an existing release, past release, or a material threat of a release of any hazardous substance or petroleum products into structures on the property or in the ground, groundwater, or surface water of the property.

The proposed project is located on an 8.5 acre parcel out of a 54-acre parcel owned by SDG&E. SDG&E has owned the property since 1970. The project site consists primarily of a former orchard and dirt roads to access the orchard. Plastic irrigation pipes are running through the orchard, as well as water/hose connections (TRC2008b Section 2.3). Although the site has been used as an orchard since 1946 the orchard has not been maintained or irrigated for at least the last five years (OGE2008a Section 6.14.1). Concentrations of Total Petroleum Hydrocarbons (TPH), Volatile organic compounds (VOC's), herbicides, and pesticides were not detected in soul samples analyzed at the site (OGE2008a Section 6.14A Appendix E). Two pole mounted transformers are also located on site. Soil sampling directly below the transformer and in another area on the project did not identify detectable Polychlorinated Biphenyls (PCBs) in the soil (TR2008e Phase I).

Other onsite uses of the 54-acre SDG&E property include the Pala electrical substation and a material storage area as well as an onsite caretaker residence. Neither the substation nor the storage area are included as part of the project site. The storage area will be used as a construction laydown area.

Staff has proposed Conditions of Certification **WASTE-1** and **WASTE-2** to mitigate potential impacts. These proposed conditions of certification require that a Registered Professional Geologist or Engineer with experience in remedial investigation and feasibility studies be available for consultation during soil excavation and grading activities. This would be adequate to address identification and investigation of any soil or groundwater contamination that may be encountered.

Construction Impacts and Mitigation

Site preparation, demolition, and construction of the proposed power plant and associated facilities would generate both nonhazardous and hazardous wastes in solid and liquid forms (OGE2008a, section 6.14.1.2.1). There will be minimum demolition because of the current uses of the site. The applicant will remove 600 dead orchard trees and portions of two former dairy farms' roads that are located along the pipeline route (OGE2008a Figure 6.6-4 b and 6.6-4 C). Therefore, construction and operation are merged together into construction impacts. Six hundred and fifty cubic yards of demolition waste will be recycled or landfilled (OGE2008e Table 6.14-3). Before construction can begin, the project owner would be required to develop and implement a Construction Waste Management Plan, per proposed Condition of Certification **WASTE-3**.

Non-hazardous Wastes

Staff estimates the non-hazardous solid wastes generated during construction would include approximately 1,100 tons of scrap wood, concrete, steel/metal, paper, glass, and plastic waste. Staff estimated the tonnage using estimates in OGE2008a, Section Table 6.14-3 and the California Integrated Waste Management Board Construction/Demolition and Inert Debris Tools http:www.ciwmb.ca.gov/leatraining/Resources/CDI/tools?Calculations.htm.

All non-hazardous wastes would be recycled to the extent possible and non-recyclable wastes would be collected by a licensed hauler and disposed in a solid waste disposal facility, in accordance with Title 14, California Code of Regulations, §17200 et seq.

Non-hazardous liquid wastes would also be generated during construction, including sanitary wastes, dust suppression drainage, and equipment wash water. Sanitary wastes would be collected in portable, self-contained toilets and pumped periodically for disposal at an appropriate facility. Potentially contaminated equipment wash water will be contained at designated wash areas and transported to a sanitary wastewater treatment facility. Please see the **SOIL AND WATER RESOURCES** section of this document for more information on the management of project wastewater.

Hazardous Wastes

Hazardous wastes anticipated to be generated during construction include empty hazardous material containers, solvents, waste paint, oil absorbents, used oil, oily rags, batteries, and cleaning wastes. The amount of waste generated would be minor if handled in the manner identified in the AFC (OGE2008a, section 614.2.1.2).

The project owner would be required to obtain a unique hazardous waste generator identification number for the site prior to starting construction pursuant to proposed Condition of Certification **WASTE-4**. Although the hazardous waste generator number is determined based on site location, both the construction contractor and the project owner/operator could be considered the generator of hazardous wastes at the site. Wastes would be accumulated onsite for less than 90 days and then properly manifested, transported and disposed at a permitted hazardous waste management facility by licensed hazardous waste collection and disposal companies. The applicant provided staff with a list of six recycling facilities that may be used to manage project recycle materials and wastes (TRC2008E Data Response 71). Staff reviewed the disposal methods described in AFC Table 6.14-3 and in the responses to data requests, and concluded that all wastes would be disposed in accordance with all applicable LORS. Should any construction waste management-related enforcement action be taken or initiated by a regulatory agency, the project owner would be required by proposed Condition of Certification **WASTE-5** to notify the Energy Commission's Compliance Project Manager (CPM) whenever the owner becomes aware of any such action.

In the event that construction excavation, grading or trenching activities for the proposed project encounter potentially contaminated soils, specific handling, disposal, and other precautions may be necessary pursuant to hazardous waste management LORS, staff finds that proposed Conditions of Certification **WASTE-1** and **WASTE-2**

would be adequate to address any soil contamination contingency that may be encountered during construction of the project and would ensure compliance with LORS. Absent any unusual circumstances, staff considers project compliance with LORS to be sufficient to ensure that no significant impacts would occur as a result of project waste management activities.

Construction and Demolition (C&D) Waste Diversion

As an incentive to builders to recycle or reuse construction wastes and to help divert a larger percentage of these wastes from disposal at local landfills, San Diego County has adopted a C&D waste diversion deposit program, Ordinance 9840 Sections 68.508 through 68.518. This program was established in accordance with the mandates of the Integrated Waste Management Act of 1989 [Assembly Bill (AB) 939, Sher, Chapter 1095, Statutes of 1989], which established landfill waste diversion goals for both the state and local jurisdictions. Effective April 21, 2007, debris from construction and demolition projects must be diverted away from landfill disposal in the unincorporated portions of San Diego County. The ordinance requires that 90 percent of inert materials and 70 percent of all other materials must be recycled from a project. In order to comply with the ordinance, applicants must submit a Construction and Demolition Debris Management Plan and a fully refundable Performance Guarantee prior to building permit. This ordinance applies to construction, demolition, or renovation projects, 40,000 square feet or greater in the unincorporated county of San Diego. The deposit is fully refundable if, after project completion, the applicant submits documentation that at least 50 percent of project C&D wastes were diverted from disposal at landfills. In addition to the deposit and administrative fee, projects are also required to prepare and submit a project waste management and recycling plan upon application for a building permit. Adoption of Condition of Certification **WASTE-6** would ensure OGP owner compliance with Sections 68.508 through 68.518 of the San Diego County Code of Regulatory Ordinances. Staff believes that compliance with proposed Condition of Certification **WASTE-6** would further ensure that project wastes are managed properly and further reduce potential impacts to local landfills from project wastes.

Operation Impacts and Mitigation

The proposed OGP would generate non-hazardous and hazardous wastes in both solid and liquid forms under normal operating conditions. Table 6.14 of the project AFC gives a summary of the operation waste streams, expected waste volumes and generation frequency, and management methods proposed. Before operations can begin, the project owner would be required to develop and implement an Operation Waste Management Plan pursuant to proposed Condition of Certification **WASTE-7**. The Operation Waste Management Plan details the types and volumes of waste to be generated and how wastes will be managed, recycled, and or disposed of after generation.

Non-hazardous Solid Wastes

Non-hazardous solid wastes expected to be generated during project operation include routine maintenance wastes (such as used air filters, spent deionization resins, sand and filter media) as well as domestic and office wastes (such as office paper, newsprint, aluminum cans, plastic, and glass). All non-hazardous wastes will be recycled to the extent possible, and non-recyclable wastes would be regularly transported offsite to a

local solid waste disposal facility (OGE2008a, section 6.14.2.2.1). The applicant estimates the project will generate approximately 1.5 tons of non-hazardous waste per year (OGE2008a, page 6.14-15).

Non-hazardous Liquid Wastes

Non-hazardous liquid wastes would be generated during facility operation, and are discussed in the **SOIL AND WATER RESOURCES** section of this document.

Hazardous Wastes

The project owner/operator would be considered the generator of hazardous wastes at the site during facility operations. Therefore, the project owner's unique hazardous waste generator identification number, obtained prior to construction in accordance with proposed Condition of Certification **WASTE-4**, would be retained and used for hazardous waste generated during facility operation.

Hazardous wastes expected to be generated during routine project operation include used hydraulic fluids, oils, greases, oily filters and rags, spent SCR catalyst, cleaning solutions and solvents, and batteries. In addition, spills and unauthorized releases of hazardous materials or hazardous wastes may generate contaminated soils or materials that may require corrective action and management as hazardous waste. Proper hazardous material handling and good housekeeping practices will help keep spill wastes to a minimum. However, to ensure proper cleanup and management of any contaminated soils or waste materials generated from hazardous materials spills, staff proposes Condition of Certification **WASTE-8** requiring the project owner/operator to report, clean-up, and remediate as necessary, any hazardous materials spills or releases in accordance with all applicable federal, state, and local requirements. More information on hazardous material management, spill reporting, containment, and spill control and countermeasures plan provisions for the project are provided in the **HAZARDOUS MATERIAL MANAGEMENT** section of this Staff Assessment.

The amounts of hazardous wastes generated during the operation of OGP would be minor, with source reduction and recycling of wastes implemented whenever possible. The hazardous wastes would be temporarily stored on-site, transported offsite by licensed hazardous waste haulers, and recycled or disposed at authorized disposal facilities in accordance with established standards applicable to generators of hazardous waste (Title 22, CCR, §66262.10 et seq.). Should any operations waste management-related enforcement action be taken or initiated by a regulatory agency, the project owner would be required by proposed Condition of Certification **WASTE-5** to notify the CPM whenever the owner becomes aware of any such action.

Impact on Existing Waste Disposal Facilities

Non-hazardous Solid Wastes

During construction of the proposed project, approximately 1,100 tons of solid waste will be generated and recycled or disposed in a Class III landfill (OGE2008a, Section 6.14). The non-hazardous solid wastes generated yearly at OGP would also be recycled if possible, or disposed in a Class III landfill.

Table 6.14-1 of the project AFC identifies five non-hazardous (Class III) waste disposal facilities that could potentially take the non-hazardous construction and operation wastes generated by the OGP. These Class III landfills are all located in southern California in San Diego County. The remaining capacity for the four landfills combined is over 95 million cubic yards. The total amount of nonhazardous waste generated from project construction and operation will contribute less than one percent of the available landfill capacity. Staff finds that disposal of the solid wastes generated by the OGP can occur without significantly impacting the capacity or remaining life of any of these facilities.

Hazardous Wastes

Section 5.14.2.3.2 of the project AFC discusses the two Class I landfills in California: The Clean Harbor Landfill (Buttonwillow) in Kern County, and the Chemical Waste Management Landfill (Kettleman Hills) in Kings County. The Kettleman Hills facility also accepts Class II and Class III wastes. In total, there is in excess of 10 million cubic yards of remaining hazardous waste disposal capacity at these landfills, with approximately 30 years of remaining operating lifetimes.

Hazardous wastes generated during construction and operation would be recycled to the extent possible and practical. Those wastes that cannot be recycled will be transported offsite to a permitted treatment, storage, or disposal facility. The volume of hazardous waste from the OGP requiring offsite disposal would be far less than staff's threshold of significance and would therefore not significantly impact the capacity or remaining life of the Class I waste facilities.

CUMULATIVE IMPACTS AND MITIGATION

The OGP AFC lists nine projects proposed for the area: the Gregory Canyon Landfill, the Rosemary Mountain quarry, the Pala Band of Mission Indians cell tower project, the Palomar College Campus, the Pala casino expansion and four potential residential and mixed use projects (OGE2008a page 6.14-18). The OGP project will recycle over 50 percent of the construction of non-hazard waste (OGE2008a Tables 6.14-3). Less than one ton per year of hazardous waste will be disposed in a Class I landfill during construction. Two tons of hazardous waste will be disposed of during operation.

As proposed, the amount of non-hazardous and hazardous wastes generated during construction and operation of the OGP would add to the total quantity of waste generated in the State of California. However, project wastes would be generated in modest quantities, waste recycling would be employed wherever practical, and sufficient capacity is available at several treatment and disposal facilities to handle the volumes of wastes generated by the project. Therefore, staff concludes that the waste generated by the OGP would not result in significant cumulative waste management impacts.

COMPLIANCE WITH LORS

Energy Commission staff concludes that the proposed OGP would comply with all applicable LORS regulating the management of hazardous and non-hazardous wastes during both facility construction and operation. The applicant is required to recycle and/or dispose hazardous and non-hazardous wastes at facilities licensed or otherwise

approved to accept the wastes. Because hazardous wastes would be produced during both project construction and operation, the OGP would be required to obtain a hazardous waste generator identification number from USEPA. The OGP would also be required to properly store, package and label all hazardous waste, use only approved transporters, prepare hazardous waste manifests, keep detailed records, and appropriately train employees, in accordance with state and federal hazardous waste management requirements.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

Staff received comments from the Department of Toxic Substance Control (DTSC). DTSC provided staff with a memorandum outlining nine steps that would be necessary for safe construction and operation of OGP (DTSC 2008). In the memorandum DTSC provided comments that required OGP to supply documentation on the information that would normally be included in a Phase I ESA report (DTSC 2007a). The applicant provided copies of a June 6, 2008 Phase I, ESA, an April 30, 2007 and a February 5, 2008 Phase II ESA. Staff believes these submittals address DTSC's comments.

CONCLUSIONS

Consistent with the three main objectives for staff's waste management analysis (as noted in the Introduction section of this analysis), staff provides the following conclusions:

1. After review of the applicant's proposed waste management procedures, staff concludes that project wastes would be managed in compliance with all applicable waste management LORS. Staff notes that both construction and operation wastes would be characterized and managed as either hazardous or non-hazardous waste. All non-hazardous wastes would be recycled to the extent feasible, and nonrecyclable wastes would be collected by a licensed hauler and disposed of at a permitted solid waste disposal facility. Hazardous wastes would be accumulated onsite in accordance with accumulation time limits (90,180, 270, or 365 days depending on waste type and volumes generated), and then properly manifested, transported to, and disposed of at a permitted hazardous waste management facility by licensed hazardous waste collection and disposal companies.

   However, to help ensure and facilitate ongoing project compliance with LORS, staff proposes Conditions of Certification **WASTE-1** through **8**. These conditions would require the project owner to do all of the following:

   - Ensure the project site is investigated and any contamination identified is remediated as necessary, with appropriate professional and regulatory agency oversight (**WASTE-1**, **2**, **3**, **4**, **5**, and **6**).
   - Obtain a hazardous waste generator identification number (**WASTE-4**).

- Prepare Construction Waste Management and Operation Waste Management Plans detailing the types and volumes of wastes to be generated and how wastes will be managed, recycled, and/or disposed of after generation (**WASTE-3** and **7**).
- Ensure that all spills or releases of hazardous substances are reported and cleaned-up in accordance with all applicable federal, state, and local requirements (**WASTE-8)**.
- Report any waste management-related LORS enforcement actions and how violations will be corrected (**WASTE-5**).

2. To ensure that the project site is investigated and remediated as necessary and to reduce any impacts from prior or future hazardous substance or hazardous waste releases at the site to a level of insignificance, staff proposes Conditions of Certification **WASTE-1**, **2**, **3**, 4, **5**, and **6**. These conditions would require the project owner to ensure that the project site is investigated and remediated as necessary; demonstrate that project wastes are managed properly; and ensure that any future spills or releases of hazardous substances or wastes are properly reported, cleaned-up, and remediated as necessary. Therefore, staff concludes that construction and operation of the proposed OGP project would not result in contamination or releases of hazardous substances that would pose a substantial risk to human health or the environment.

3. Regarding impacts of project wastes on existing waste disposal facilities, staff uses a waste volume threshold equal to ten (10) percent of a disposal facility's remaining capacity to determine if the impact from disposal of project wastes at a particular facility would be significant. The existing available capacity for the three Class III landfills that may be used to manage nonhazardous project wastes exceeds 95 million cubic yards (OGE 2008A Table 6.14-1). The total amount of nonhazardous wastes generated from construction and operation of OGP would contribute less than 0.1 percent of the remaining landfill capacity. Therefore, disposal of project generated non-hazardous wastes would have a less than significant impact on Class III landfill capacity.

   In addition, the two Class I disposal facilities that could be used for hazardous wastes generated by the construction and operation of OGP have a combined remaining capacity in excess of 10 million cubic yards. The total amount of hazardous wastes generated by the OGP project would contribute less than 0.02 percent of the remaining permitted capacity. Therefore, impacts from disposal of OGP generated hazardous wastes would also have a less than significant impact on the remaining capacity at Class I landfills.

Staff concludes that management of the waste generated during construction and operation of the OGP would not result in any significant adverse impacts, and would comply with applicable LORS, if the waste management practices and mitigation measures proposed in the OGP AFC and staff's proposed conditions of certification are implemented.

PROPOSED CONDITIONS OF CERTIFICATION

WASTE-1 The project owner shall provide the resume of an experienced and qualified Professional Engineer or Professional Geologist, who shall be available for consultation during site characterization (if needed), demolition, excavation and grading activities, to the CPM for review and approval. The resume shall show experience in remedial investigation and feasibility studies.
The Professional Engineer or Professional Geologist shall be given full authority by the project owner to oversee any earth moving activities that have the potential to disturb contaminated soil.

Verification: At least 30 days prior to the start of site mobilization, the project owner shall submit the resume to the CPM for review and approval.

WASTE-2 If potentially contaminated soil is identified during site characterization, demolition, excavation, or grading at either the proposed site or linear facilities, as evidenced by discoloration, odor, detection by handheld instruments, or other signs, the Professional Engineer or Professional Geologist shall inspect the site, determine the need for sampling to confirm the nature and extent of contamination, and provide a written report to the project owner, representatives of Department of Toxic Substances Control, and the CPM stating the recommended course of action.
Depending on the nature and extent of contamination, the Professional Engineer or Professional Geologist shall have the authority to temporarily suspend construction activity at that location for the protection of workers or the public. If, in the opinion of the Professional Engineer or Professional Geologist, significant remediation may be required, the project owner shall contact the CPM and representatives of the Department of Toxic Substances Control for guidance and possible oversight.

Verification: The project owner shall submit any final reports filed by the Professional Engineer or Professional Geologist to the CPM within 5 days of their receipt. The project owner shall notify the CPM within 24 hours of any orders issued to halt construction.

WASTE-3 The project owner shall prepare a Construction Waste Management Plan for all wastes generated during construction of the facility, and shall submit the plan to the CPM for review and approval. The plan shall contain, at a minimum, the following:

- A description of all construction waste streams, including projections of frequency, amounts generated and hazard classifications; and
- Management methods to be used for each waste stream, including temporary onsite storage, housekeeping and best management practices to be employed, treatment methods and companies providing treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/source reduction plans.

Verification: The project owner shall submit the Construction Waste Management Plan to the CPM for approval no less than 30 days prior to the initiation of construction activities at the site.

WASTE-4 The project owner shall obtain a hazardous waste generator identification number from the United States Environmental Protection Agency prior to generating any hazardous waste during construction and operations.

Verification: The project owner shall keep a copy of the identification number on file at the project site and provide the number to the CPM in the next Monthly Compliance Report.

WASTE-5 Upon becoming aware of any impending waste management-related enforcement action by any local, state, or federal authority, the project owner shall notify the CPM of any such action taken or proposed to be taken against the project itself, or against any waste hauler or disposal facility or treatment operator with which the owner contracts.

Verification: The project owner shall notify the CPM in writing within 10 days of becoming aware of an impending enforcement action. The CPM shall notify the project owner of any changes that will be required in the way project-related wastes are managed.

WASTE-6 The project owner shall provide a Debris Management Plan and a Performance Guarantee per the County of San Diego's Construction and Demolition Recycling Program (San Diego County Code of Regulatory Ordinance 9840 Section 68.508 through 68.518).The project owner shall ensure compliance with all of the county of San Diego's diversion program requirements and shall provide proof of compliance documentation to the county of San Diego and the CPM, including a Debris Management Plan, Performance Guarantee receipts, and records of measurement, consistent with the county of San Diego's normal reporting requirements. Project mobilization and construction shall not precede until the county of San Diego issues an approval document, consistent with the county's normal building permit approval process, and the CPM provides written concurrence.

Verification: Sixty days prior to the start of any construction activities, the project owner shall submit for review to the county of San Diego shall provide a Debris Management Plan and a Performance Guarantee per the County of San Diego's Construction and Demolition Recycling Program. At least 30 days prior to the start of any construction activities, the project owner shall submit the proposed Debris Management Plan, along with any comments received from the county of San Diego, to the CPM for review and approval. The CPM shall consider all comments by the city prior to approving the Debris Management Plan.

The project owner shall ensure that project activities are consistent with the approved Debris Management Plan and all applicable county of San Diego waste diversion requirements and provide adequate documentation of the types and volumes of wastes generated, how the wastes were managed, and volumes of wastes diverted. Project mobilization and construction shall not precede until the county of San Diego issues an approval document, consistent with the city's normal building permit approval, and the

CPM provides written concurrence. Not later than 60 days after completion of project construction, the project owner shall submit documentation of compliance with the diversion program requirements to the CPM and county of San Diego. The required documentation shall include a Debris Management Plan (as set forth by the city program), along with all necessary receipts and records of measurement from entities receiving project wastes.

WASTE-7 The project owner shall prepare an Operation Waste Management Plan for all wastes generated during operation of the facility, and shall submit the plan to the CPM for review and approval. The plan shall contain, at a minimum, the following:

- A detailed description of all operation and maintenance waste streams, including projections of amounts to be generated, frequency of generation, and waste hazard classifications;
- Management methods to be used for each waste stream, including temporary onsite storage, housekeeping and best management practices to be employed, treatment methods and companies providing treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/source reduction plans;
- Information and summary records of conversations with the local Certified Unified Program Agency and the Department of Toxic Substances Control regarding any waste management requirements necessary for project activities. Copies of all required waste management permits, notices, and/or authorizations shall be included in the plan and updated as necessary;
- A detailed description of how facility wastes will be managed, and any contingency plans to be employed, in the event of an unplanned closure or planned temporary facility closure; and
- A detailed description of how facility wastes will be managed and disposed upon closure of the facility.

Verification: The project owner shall submit the Operation Waste Management Plan to the CPM for approval no less than 30 days prior to the start of project operation. The project owner shall submit any required revisions to the CPM within 20 days of notification from the CPM that revisions are necessary.

The project owner shall also document in each Annual Compliance Report the actual volume of wastes generated and the waste management methods used during the year; provide a comparison of the actual waste generation and management methods used to those proposed in the original Operation Waste Management Plan; and update the Operation Waste Management Plan as necessary to address current waste generation and management practices.

WASTE-8 The project owner shall ensure that all spills or releases of hazardous substances, hazardous materials, or hazardous waste are reported, cleaned-up, and remediated as necessary, in accordance with all applicable federal, state, and local requirements.

Verification: The project owner shall document all unauthorized releases and spills of hazardous substances, materials, or wastes that occur on the project property or related pipeline and transmission corridors. The documentation shall include, at a minimum, the following information: location of release; date and time of release; reason for release; volume released; amount of contaminated soil/material generated; how release was managed and material cleaned-up; if the release was reported; to whom the release was reported; release corrective action and cleanup requirements placed by regulating agencies; level of cleanup achieved and actions taken to prevent a similar release or spill; and disposition of any hazardous wastes and/or contaminated soils and materials that may have be generated by the release. Copies of the unauthorized spill documentation shall be provided to the CPM within 30 days of the date the release was discovered.

REFERENCES

CEC2008k – CEC/F. Miller (tn47449) Data Requests 1-73, Set #1 dated 8/5/08. Submitted to Dockets 8/5/08.

DTSC2008A – A. Shami (n47892) DTSC response to OG AFC dated 8/27/08. Submitted to Dockets 9/3/08.

OGE2008a – OGE/S. Thome (tn46770) Application for Certification Orange Grove Energy dated 6/19/08. Submitted to Dockets 6/19/08.

OGE2008c – OGE/S. Thome (tn46979) Supplement to AFC dated 7/8/08. Submitted to Dockets 7/8/08.

TRC2008a – J. Stenger (tn46882) Project design drawings previously submitted at a reduced scale – Appendix 2-A dated 6/26/08. Submitted to Dockets 6/26/08.

TRC2008b – J. Stenger (tn46883) Phase I Environmental Site Assessment previously included in Appendix 6.14-A dated 6/26/08. Submitted to Dockets 6/26/08.

TRC2008f – J. Stenger (tn47854) Data Responses 1-73 dated 8/29/08. Submitted to Dockets 8/29/08.

WORKER SAFETY AND FIRE PROTECTION

Testimony of Alvin J. Greenberg, Ph.D. and Rick Tyler

SUMMARY OF CONCLUSIONS

Staff concludes that if the applicant for the proposed Orange Grove Project (OGP) provides a Project Construction Safety and Health Program and a Project Operations and Maintenance Safety and Health Program, as required by Conditions of Certification **WORKER SAFETY -1**and **-2** and fulfils the requirements of **WORKER SAFETY -3** through **-6**, the project would incorporate sufficient measures to ensure adequate levels of industrial safety and comply with applicable laws, ordinances, regulations, and standards. The proposed conditions of certification provide assurance that the Construction Safety and Health Program and the Operations and Maintenance Safety and Health Program proposed by the applicant will be reviewed by the appropriate agencies before implementation. The conditions also require verification that the proposed plans adequately assure worker safety and fire protection and comply with applicable laws, ordinances, regulations, and standards.

INTRODUCTION

Worker safety and fire protection is regulated through laws, ordinances, regulations, and standards (LORS), at the federal, state, and local levels. Industrial workers at the facility operate equipment and handle hazardous materials daily and may face hazards that can result in accidents and serious injury. Protection measures are employed to eliminate or reduce these hazards or to minimize the risk through special training, protective equipment, and procedural controls.

The purpose of this Staff Assessment (SA) is to assess the worker safety and fire protection measures proposed by the Orange Grove Project (OGP) and to determine whether the applicant has proposed adequate measures to:

- comply with applicable safety LORS;
- protect the workers during construction and operation of the facility;
- protect against fire; and
- provide adequate emergency response procedures.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Worker Safety and Fire Protection Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable Law	Description
Federal	
Title 29 U.S. Code (USC) section 651 et seq (Occupational Safety and Health Act – OSHA of 1970)	This act mandates safety requirements in the workplace with the purpose of "[assuring] so far as possible every working man and woman in the nation safe and healthful working conditions and to preserve our human resources" (29 USC § 651).
Title 29 Code of Federal Regulation (CFR) sections 1910.1 to 1910.1500 (OSHA Regulations)	These sections define the procedures for promulgating regulations and conducting inspections to implement and enforce safety and health procedures to protect workers, particularly in the industrial sector.
29 CFR sections 1952.170 to 1952.175	These sections provide federal approval of California's plan for enforcement of its own Safety and Health requirements, in lieu of most of the federal requirements found in 29 CFR sections 1910.1 to 1910.1500.
State	
Title 8 California Code of Regulations (Cal Code Regs.) all applicable sections (Cal/OSHA regulations)	These sections require that all employers follow these regulations as they pertain to the work involved. This includes regulations pertaining to safety matters during construction, commissioning, and operations of power plants, as well as safety around electrical components, fire safety, and hazardous materials use, storage, and handling.
24 Cal Code Regs. section 3, et seq.	This section incorporates the current addition of the Uniform Building Code.
Health and Safety Code section 25500, et seq.	This section presents Risk Management Plan requirements for threshold quantity of listed acutely hazardous materials at a facility.
Health and Safety Code sections 25500 to 25541	These sections require a Hazardous Material Business Plan detailing emergency response plans for hazardous materials emergency at a facility.
Local (or locally enforced)	
California Fire Code	The fire code contains general provisions for fire safety, including requirements for proper storage and handling of hazardous materials and listing of the information needed by emergency response personnel. Enforced by the North County Fire Protection District.
County Fire Code – San Diego County Code of Regulatory Ordinances, Title 3, Division 5, Chapter 3	Ensures that all industrial facilities comply with rules and regulations regarding flammable materials and other fire hazards.
National Fire Protection Association (NFPA) standards	These standards provide specifications and requirements for fire safety, including the design, installation, and maintenance of fire protection equipment. Enforced by the North County Fire Protection District.

SETTING

The proposed facility would be located in rural North San Diego County, about five miles east of the City of Fallbrook and about two miles west of the community of Pala. The proposed site is not currently within the jurisdiction of a fire department; however, it is within the Sphere of Influence of the North County Fire Protection District (NCFPD). The County of San Diego has indicated that it will assign a fire protection district to provide services to the area or the applicant has indicated will enter into a private service contract directly with the NCFPD. Once the county designates a service provider or a private service contract is approved, the project would be under the jurisdiction of the local fire district for code enforcement and fire protection/emergency response services (OGE 2008a, Section 6.10.1.5.2). Emergency medical response would also be provided by the NCFPD or the Valley Center Fire Protection District which may have an exclusive operating area (EOA) franchise for a region that includes the OGP site (TRC2008f, Data Response #56 and Exhibit 54-1).

The closest NCFPD station to the OGP site would be Station #4, located at 4375 Pala Mesa Drive (approximately five miles west). Response time from this station to the site would be about nine minutes (OGE 2008a, Section 6.10.1.5.2 and NCFPD 2008). The NCFPD as a whole has six fire stations (servicing about 90-square miles).

Although the site would be under the jurisdiction of the NCFPD , the nearest station to the site would be the Pala Fire Department (PFD) station, located about two miles northeast. This station would respond to the OGP site under a mutual aid agreement with NCFPD. The PFD station is equipped with fire response personel and is staffed with paramedics assigned by Mercy Ambulance, an emergency medical services contractor. Total response time from this station would be about three minutes (OGE 2008a, Section 6.10.1.5.2 and PFD 2008).

The NCFPD would also be the first responder to hazardous materials incidents, with full response provided by the San Diego City and County Department of Health Hazardous Materials Incident Response Team (DEH-HIRT). The DEH-HIRT is capable of handling any hazardous materials-related incident and would respond within one hour from Station No. 44, located at 10011 Black Mountain Road in San Diego, approximately 37 miles away.

Worker Safety and Fire Protection Table 1
Fire Department Equipment and Personnel*

Fire Department/ Station	Total Response Time**	Distance to OGP	EMS/HazMat Capability***
NCFPD Station #4	9 min.	~5 mi	Y/Y
Pala Fire Department	3 min.	~2 mi	Y/Y

***Source: phone conversations with Fire Chief Metcalf (NCFPD 2008) and Fire Chief Ravago (PFD 2008).
**total response times are estimated from the moment a 911 call is made to arrival at the site and are dependent upon traffic conditions and other variables.
***all personnel are trained to at least EMT-1 level and first responder for hazardous materials incidents.

In addition to construction and operations worker safety issues, the potential exists for exposure to contaminated soil during site preparation. The Phase I Environmental Site Assessment conducted for this site in 2008 identified no "Recognized Environmental Conditions" per the American Society for Testing and Materials Standards (ASTM) definition. That is, there was no evidence or record of any use, spillage or disposal of hazardous substances on the site, nor any other environmental concern that would require remedial action (OGE 2008a, Section 6.14.1.2 and Appendix 6.14-A). To address the remote possibility that soil contamination would be encountered during construction of the OGP, proposed Conditions of Certification **WASTE-1** and **WASTE-2** require a registered professional engineer or geologist to be available during soil excavation and grading to ensure proper handling and disposal of contaminated soil. See the staff assessment section on **WASTE MANAGEMENT** for a more detailed analysis of this topic.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

Two issues are assessed in Worker Safety-Fire Protection:

1. The potential for impacts on the safety of workers during demolition, construction, and operations activities, and

2. Fire prevention/protection, emergency medical response, and hazardous materials spill response during demolition, construction, and operations.

Worker safety issues are thoroughly addressed by California Division of Occupational Safety and Health (Cal-OSHA) regulations. If all LORS are followed, workers will be adequately protected. Thus, the standard for staff's review and determination of significant impacts on workers is whether or not the applicant has demonstrated adequate knowledge about and dedication to implementing all pertinent and relevant Cal-OSHA standards.

Regarding fire prevention matters, staff reviews and evaluates the on-site fire-fighting systems proposed by the applicant and the time needed for off-site local fire departments to respond to a fire, medical, or hazardous material emergency at the proposed power plant site. If on-site systems do not follow established codes and industry standards, staff recommends additional measures. Staff reviews and evaluates the local fire department capabilities and response time in each area and interviews the local fire officials to determine if they feel adequately trained, manned, and equipped to respond to the needs of a power plant. Staff then determines if the presence of the power plant would cause a significant impact on a local fire department. If it would, staff will recommend that the applicant mitigate this impact by providing increased resources to the fire department.

DIRECT/INDIRECT IMPACTS AND MITIGATION

Worker Safety

Industrial environments are potentially dangerous during construction and operation of facilities. Workers at the proposed OGP would be exposed to loud noises, moving equipment, trenches, and confined space entry and egress problems. The workers may experience falls, trips, burns, lacerations, and numerous other injuries. They have the potential to be exposed to falling equipment or structures, chemical spills, hazardous waste, fires, explosions, and electrical sparks and electrocution. It is important for the OGP to have well-defined policies and procedures, training, and hazard recognition and control at its facility to minimize such hazards and protect workers. If the facility complies with all LORS, workers will be adequately protected from health and safety hazards.

A Safety and Health Program will be prepared by the applicant to minimize worker hazards during construction and operation. Staff uses the phrase “Safety and Health Program” to refer to the measures that will be taken to ensure compliance with the applicable LORS during the construction and operational phases of the project.

Construction Safety and Health Program

OGP encompasses construction and operation of a natural gas fired-facility. Workers will be exposed to hazards typical of construction and operation of a gas-fired simple cycle facility.

Construction Safety Orders are published in 8 CCR sections 1502, et seq. These requirements are promulgated by Cal/OSHA and are applicable to the construction phase of the project. The Construction Safety and Health Program will include the following:

- Construction Injury and Illness Prevention Program (8 CCR § 1509)
- Construction Fire Prevention Plan (8 CCR § 1920)
- Personal Protective Equipment Program (8 CCR §§ 1514 to 1522)
- Emergency Action Program and Plan

Additional programs outlined in the applicant's example table of contents for a Construction Health and Safety Program (OGE 2008a Appendix 6.17-A) include:

- **Program Administration:**
  - Safety and Accident Prevention,
  - New Hire Orientation,
  - Accident/Incident Investigations and Reporting,
  - Safety Task Assignment,
  - Safety Monitoring Activities,
  - Emergency Services,
  - Site Emergency Evacuation Plan,
  - Severe Weather Plan,
  - Security,
  - Subcontractor Requirements,
  - Housekeeping,
  - Hazardous Waste Management, and
  - Competent Person Designation.
- **Occupational Health:**
  - Control of Radiation Hazards, Hazard Communication Program,
  - Bloodborne Pathogens,
  - Lead Exposure Control Program,
  - Asbestos Handling Procedures,
  - Inorganic Arsenic Exposure Control Program,
  - Heat and Cold Stress, and
  - Decontamination Procedures.
- **Equipment Safety:**
  - Construction Equipment Inspections,
  - Crane Lift Procedure, and
  - Suspended Work Basket/Platform.

The Application for Certification (AFC) includes adequate outlines of each of the above programs (OGE 2008a, Appendix 6.17-A). The applicant has stated that the construction contractor would be responsible for preparing and implementing the construction health and safety program (OGE 2008a, Section 6.17.2.1). Prior to the start of construction of the OGP, detailed programs and plans will be provided to the California Energy Commission Compliance Project Manager (CPM) and to the NCFPD pursuant to the Condition of Certification **WORKER SAFETY-1**.

Operations and Maintenance Safety and Health Program

Prior to the start of operations at the OGP, the Operations and Maintenance Safety and Health Program will be prepared. This operational safety program will include the following programs and plans:

- Injury and Illness Prevention Program (8 CCR § 3203),
- Fire Protection and Prevention Program (8 CCR § 3221),
- Personal Protective Equipment Program (8 CCR §§ 3401 to 3411), and
- Emergency Action Plan (8 CCR § 3220).

In addition, the requirements under General Industry Safety Orders (8 CCR §§ 3200 to 6184), Electrical Safety Orders (8 CCR §§ 2299 to 2974), and Unfired Pressure Vessel Safety Orders (8 CCR §§ 450 to 544) will be applicable to the project. Written safety programs for the OGP, which the applicant will develop, will ensure compliance with the above-mentioned requirements. Prior to operation of OGP, all detailed programs and plans will be provided to the CPM and the NCFPD pursuant to Condition of Certification **WORKER SAFETY-2**.

Safety and Health Program Elements

As mentioned above, the applicant provided the proposed outlines for both a Construction Safety and Health Program and an Operations Safety and Health Program. The measures in these plans are derived from applicable sections of state and federal law. The major items required in both safety and health programs are as follows:

Injury and Illness Prevention Program

- identity of person(s) with authority and responsibility for implementing the program;
- safety and health policy of the plan;
- definition of work rules and safe work practices for construction activities;
- system for ensuring that employees comply with safe and healthy work practices;
- system for facilitating employer-employee communications;
- procedures for identifying and evaluating workplace hazards and developing necessary program(s);
- methods for correcting unhealthy/unsafe conditions in a timely manner;
- specific safety procedures; and
- training and instruction.

The applicant stated that a safety coordinator would be assigned to provide ongoing input on the effectiveness of the IIPP and recommend updates or improvements (OGE 2008a, Section 6.17.2.2.1).

Fire Prevention Plan

California Code of Regulations requires an Operations Fire Prevention Plan (8 CCR § 3221). The plan will accomplish the following actions:

- determine general program requirements;
- determine fire hazard inventory, including ignition sources and mitigation;
- develop good housekeeping practices and proper materials storage;
- establish employee alarm and/or communication system(s);
- provide portable fire extinguishers at appropriate site locations;
- locate fixed fire fighting equipment in suitable areas;
- specify fire control requirements and procedures;
- establish proper flammable and combustible liquid storage facilities;
- identify the location and use of flammable and combustible liquids;
- provide proper dispensing and determine disposal requirements for flammable liquids;
- establish and determine training and instruction requirements and programs; and
- identify personnel to contact for information on plan contents.

Staff proposes that the applicant submit a final Fire Prevention Plan to the CPM for review and approval and to the NCFPD for review and comment to satisfy proposed Conditions of Certification **WORKER SAFETY-1** and **WORKER SAFETY-2**.

Personal Protective Equipment Program

California regulations require personal protective equipment and first aid supplies whenever hazards are present that due to process, environment, chemicals, or mechanical irritants, can cause injury or impair bodily function as a result of absorption, inhalation, or physical contact (8 CCR §§ 3380 to 3400). The OGP operational environment will require personal protective equipment.

All safety equipment must meet National Institute of Safety and Health (NIOSH) or American National Standards Institute (ANSI) standards and will carry markings, numbers, or certificates of approval. Respirators must meet NIOSH and Cal/OSHA standards. Each employee must be provided with the following information pertaining to the protective clothing and equipment:

- proper use, maintenance, and storage;
- when to use the protective clothing and equipment;
- benefits and limitations; and

- when and how to replace the protective clothing and equipment.

The Personal Protective Equipment Program ensures that employers comply with the applicable requirements for the program and provides employees with the information and training necessary to protect them from potential workplace hazards.

Emergency Action Plan

California regulations require an Emergency Action Plan (8 CCR § 3220). The AFC contains a satisfactory outline for an Emergency Response Plan (OGE 2008a, Appendix 6.17-B).

The plan will accomplish the following:

- establish emergency escape procedures and emergency escape route for the facility;
- determine procedures to be followed by employees who remain to operate critical plant operations before they evacuate;
- provide procedures to account for all employees and visitors after emergency evacuation of the plant has been completed;
- specify rescue and medical duties for assigned employees;
- identify fire and emergency reporting procedures to regulatory agencies;
- develop alarm and communication systems for the facility;
- establish a list of personnel to contact for information on the plan contents;
- provide emergency response procedures for ammonia release; and
- determine and establish training and instruction requirements and programs.

Written Safety Program

In addition to the specific plans listed above, additional LORS called “safe work practices” apply to the project. Both the Construction and the Operations Safety Programs will address safe work practices under a variety of programs. The components of these programs include, but are not limited to, the programs found under the heading Construction Safety and Health Program earlier in this staff assessment.

Safety Training Programs

Employees will be trained in the safe work practices described in the above-referenced safety programs.

Additional Mitigation Measures

Protecting construction workers from injury and disease is among the greatest challenges in occupational safety and health. The following facts are reported by the National Institute for Occupational Safety and Health (NIOSH):

- More than 7 million persons work in the construction industry, representing 6% of the labor force. Approximately 1.5 million of these workers are self employed.

- Of approximately 600,000 construction companies, 90% employ fewer than 20 workers. Few have formal safety and health programs.
- From 1980 to 1993, an average of 1,079 construction workers were killed on the job each year, totaling more fatal injuries than in any other industry.
- Falls caused 3,859 construction worker fatalities (25.6%) between 1980 and 1993.
- Construction injuries account for 15% of workers' compensation costs.
- Assuring safety and health in construction is complex, involving short-term work sites, changing hazards, and multiple operations and crews working in close proximity.
- In 1990, Congress directed NIOSH to undertake research and training to reduce diseases and injuries among construction workers in the United States. Under this mandate, NIOSH funds both intramural and extramural research projects.

The hazards associated with the construction industry are thus well documented. These hazards increase in complexity in the multi-employer work sites typical of large complex industrial-type projects such as the construction of gas-fired power plants. In order to reduce and/or eliminate these hazards, it has become standard industry practice to hire a Construction Safety Supervisor to ensure a safe and healthful environment for all personnel. This has been evident in the audits of power plants under construction recently conducted by the staff. The federal Occupational Safety and Health Administration (OSHA) has also entered into strategic alliances with several professional and trade organizations to promote and recognize safety professionals trained as Construction Safety Supervisors, Construction Health and Safety Officers, and other professional designations. The goal of these partnerships is to encourage construction subcontractors to improve their safety and health performance; to assist them in striving for the elimination of the four hazards (falls, electrical, caught in/between and struck-by hazards), which account for the majority of fatalities and injuries in this industry and have been the focus of targeted OSHA inspections; to prevent serious accidents in the construction industry through implementation of enhanced safety and health programs and increased employee training; and to recognize those subcontractors with exemplary safety and health programs.

To date, there are no OSHA or Cal/OSHA requirements that an employer hire or provide for a Construction Safety Officer. OSHA and Cal/OSHA regulations do, however, require that safety be provided by an employer and the term “Competent Person” is used in many OSHA and Ca/-OSHA standards, documents, and directives. A “Competent Person” is usually defined by OSHA as an individual who, by way of training and/or experience, is knowledgeable of standards, is capable of identifying workplace hazards relating to the specific operations, is designated by the employer, and has authority to take appropriate action. Therefore, in order to meet the intent of the OSHA standard to provide for a safe workplace during power plant construction, staff proposes Condition of Certification **WORKER SAFETY-3,** which would require the applicant/project owner to designate and provide for a power plant site Construction Safety Supervisor.

As discussed above, the hazards associated with the construction industry are well documented. These hazards increase in complexity in the multi-employer work sites typical of large complex industrial-type projects such as the construction of gas-fired power plants.

Accidents, fires, and a worker death have occurred at Energy Commission-certified power plants in the recent past due to the failure to recognize and control safety hazards and the inability to adequately supervise compliance with occupational safety and health regulations. Safety problems have been documented by Energy Commission staff in safety audits conducted in 2005 at several power plants under construction. The findings of the audit staff include, but are not limited to, such safety oversights as:

- lack of posted confined space warning placards/signs;
- confusing and/or inadequate electrical and machinery lockout/tagout permitting and procedures;
- confusing and/or inappropriate procedures for handing over lockout/tagout and confined space permits from the construction team to commissioning team and then to operations;
- dangerous placement of hydraulic elevated platforms under each other;
- inappropriate placement of fire extinguishers near hotwork;
- dangerous placement of numerous power cords in standing water on the site, thus increasing the risk of electrocution;
- construction of an unsafe aqueous ammonia unloading pad;
- inappropriate and unsecure placement of above-ground natural gas pipelines inside the facility but too close to the perimeter fence; and
- lack of adequate employee or contractor written training programs addressing proper procedures to follow in the event of finding suspicious packages or objects either on or off site.

In order to reduce and/or eliminate these hazards, it is necessary for the Energy Commission to have a professional Safety Monitor on site to track compliance with Cal/OSHA regulations and periodically audit safety compliance during construction, commissioning, and the hand over to operational status. These requirements are outlined in Condition of Certification **WORKER SAFETY-4**. A Safety Monitor, hired by the project owner yet reporting to the Chief Building Official and CPM, will serve as an extra set of eyes to ensure that safety procedures and practices are fully implemented at all power plants certified by the Energy Commission. During the audits conducted by staff, most site safety professionals welcomed the audit team and actively engaged the team in questions about its findings and recommendations. These safety professionals recognized that safety requires continuous vigilance and that the presence of an independent audit team provided a fresh perspective of the site.

Fire Hazards

During construction and operation of the proposed OGP project, there is the potential for both small fires and major structural fires. Electrical sparks; combustion of fuel oil,

natural gas, hydraulic fluid, mineral oil, or insulating fluid at the power plant switchyard; or flammable liquids, explosions, and over-heated equipment may cause small fires. Major structural fires in areas without automatic fire detection and suppression systems are unlikely to develop at power plants. Fires and explosions of natural gas or other flammable gasses or liquids are rare. Compliance with all LORS will be adequate to assure protection from all fire hazards.

Staff reviewed the information provided in the AFC and spoke to representatives of the North County Fire Protection District (NCFPD) and the Pala Fire Department (PFD) to determine if available fire protection services and equipment would adequately protect workers and to determine the project's impact on fire protection services in the area. The project will rely on both on-site fire protection systems and local fire protection services. The on-site fire protection system provides the first line of defense for small fires. In the event of a major fire, fire support services, including trained firefighters and equipment for a sustained response, would be provided by the NCFPD and the PFD, given that the project site is annexed to the NCFPD service area (TRC2008f, Exhibit 54-1; NCFPD 2008, and PFD 2008).

Construction

The Construction Fire Protection and Prevention plan will address the placement of fire extinguishers throughout the site during construction and will provide guidance for safety procedures and training to minimize the likelihood of fires during the construction period (OGE 2008a, Appendix 6.17-A).

Operation

The information in the AFC indicates that the project intends to meet the fire protection and suppression requirements of the California Fire Code, all applicable recommended National Fire protection Association (NFPA) standards (including Standard 850 addressing fire protection at electric generating plants), and all Cal/OSHA requirements. Fire suppression elements in the proposed plant will include both fixed and portable fire extinguishing systems. The fire water will be supplied from the Fallbrook Public Utility District (FPUD) by truck transport and stored in a 535,000-gallon tank of which 360,000 gallons would be reserved for fire suppression (OGE 2008a, Sections 2.6.2.2 and 2.6.2.3). The water tank would supply the plant fire loop using one electric fire pump and one diesel-driven fire pump to maintain adequate pressure (OGE 2008a, Section 2.9.3).

A fixed sprinkler system would be installed in administrative buildings in accordance with NFPA requirements. A carbon dioxide fire protection system would be provided for the combustion turbine generators and accessory equipment. This system would have fire detection sensors that will trigger alarms, turn off ventilation, close ventilation openings, and automatically actuate the CO_2 suppression system. In addition to the fixed fire protection system, the appropriate class of service portable extinguishers and hose reels would be located throughout the facility at code-approved intervals (OGE 2008a, Sections 2.9.3 and 6.17.2.4.2). These systems are standard requirement by the NFPA and the Uniform Fire Code, and staff has determined that they will ensure adequate fire protection.

The applicant would be required by Conditions of Certification **WORKER SAFETY-1** and **-2** to provide the final Fire Protection and Prevention Program to staff and to the NCFPD prior to construction and operation of the project, to confirm the adequacy of the proposed fire protection measures.

Emergency Medical Services Response

Staff conducted a statewide survey to determine the frequency of emergency medical services (EMS) response and off-site fire-fighter response for natural gas-fired power plants in California. The purpose of the analysis was to determine what impact, if any, power plants may have on local emergency services. Staff has concluded that incidents at power plants that require fire or EMS response are infrequent and represent an insignificant impact on the local fire departments, except for rare instances where a rural fire department has mostly volunteer firefighting staff. However, staff has determined that the potential for both work-related and nonwork-related heart attacks exists at power plants. In fact, staff's research on the frequency of EMS response to gas-fired power plants shows that many of the responses for cardiac emergencies involved nonwork-related incidences, including those involving visitors. The need for prompt response within a few minutes is well documented in the medical literature. Staff believes that the quickest medical intervention can only be achieved with the use of an on-site automatic external defibrillator (AED); the response from an off-site provider would take longer regardless of the provider location. This fact is also well documented and serves as the basis for the maintenance of on-site cardiac defibrillation devices at many private and public locations (e.g., airports, factories, government buildings). Therefore, staff concludes that, with the advent of modern cost-effective cardiac defibrillation devices, it is proper in a power plant environment to maintain such a device on site to address cardiac arrythmias resulting from industrial accidents or other nonwork-related causes.

Staff proposes a Condition of Certification **WORKER SAFETY-5** which would require that a portable AED be located on site, that all power plant employees on site during operations be trained in its use, and that a representative number of workers on site during construction and commissioning also be trained in its use. Furthermore, due to the confusion over what entity will provide EMS and fire resposne services and the legal basis for providing those services (private service contract or assignement by San Diego County), staff proposes an additional Condition of Certification **WORKER SAFETY-6** which would require the project owner to have in place either a private swervice contract or the land to be annexted to a fire protection district no later than sixty days before any activity takes place on the site.

CUMULATIVE IMPACTS AND MITIGATION

Staff reviewed the potential for the construction and operation of the OGP combined with existing industrial facilities and expected new facilities to result in impacts on the fire and emergency service capabilities of the NCFPD and the PFD and found that cumulative impacts were insignificant. The NCFPD stated that if the OGP site is annexed to its jurisdiction, the annexation fees, mitigation fees, and property taxes paid by the project would cover the additional costs involved in servicing the OGP site and would ensure that the NCFPD is adequately staffed and equipped to serve as first responder to incidents at the proposed facility. The NCFPD does not expect that the

proposed OGP will have a significant impact on the department due to the safety records and sophisticated fire suppression systems typical of natural-gas fired power plants (TRC2008f, Exhibit 54-1). The PFD stated that they are adequately equipped and staffed to handle incidents at this proposed facility, and that mutual aid agreements with surrounding fire departments would ensure that their district is protected even if all of PFD's resources are dispatched to the OGP site (PFD 2008).

Given the rural area where the project is proposed to be built, the available fire suppression resources, and the lack of unique fire hazards associated with a modern gas-fired power plant, staff finds that this project will not have any significant incremental burden on the department's ability to respond to a fire or medical emergency.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

None received.

CONCLUSIONS

Staff concludes that if the applicant for the proposed OGP provides a Project Construction Safety and Health Program and a Project Operations and Maintenance Safety and Health Program as required by Conditions of Certification **WORKER SAFETY -1**, and **-2** and fulfils the requirements of Conditions of Certification **WORKER SAFETY-3** through **-6**, the project would incorporate sufficient measures to ensure adequate levels of industrial safety and comply with applicable LORS. Staff also concludes that incidents at power plants that require fire or EMS response are infrequent and represent an insignificant impact on the local fire departments.

PROPOSED CONDITIONS OF CERTIFICATION

WORKER SAFETY-1 The project owner shall submit to the Compliance Project Manager (CPM) a copy of the Project Construction Safety and Health Program containing the following:

1. a Construction Personal Protective Equipment Program;
2. a Construction Exposure Monitoring Program;
3. a Construction Injury and Illness Prevention Program;
4. a Construction Emergency Action Plan; and
5. a Construction Fire Prevention Plan.

The Personal Protective Equipment Program, the Exposure Monitoring Program, and the Injury and Illness Prevention Program shall be submitted to the CPM for review and approval concerning compliance of the programs with all applicable Safety Orders. The Construction Emergency Action Plan and

the Fire Prevention Plan shall be submitted to the North County Fire Protection District for review and comment prior to submittal to the CPM for approval.

Verification: At least 30 days prior to the start of construction, the project owner shall submit to the CPM for review and approval a copy of the Project Construction Safety and Health Program. The project owner shall provide a copy of a letter to the CPM from the North County Fire Protection District stating the Fire Department's comments on the Construction Fire Prevention Plan and Emergency Action Plan.

WORKER SAFETY-2 The project owner shall submit to the CPM a copy of the Project Operations and Maintenance Safety and Health Program containing the following:

1. an Operation Injury and Illness Prevention Plan;
2. an Emergency Action Plan;
3. a Hazardous Materials Management Program;
4. an Operation Fire Prevention Program (8 CCR § 3221); and
5. a Personal Protective Equipment Program (8 CCR §§ 3401-3411).

The Operation Injury and Illness Prevention Plan, Emergency Action Plan, and Personal Protective Equipment Program shall be submitted to the CPM for review and comment concerning compliance of the programs with all applicable Safety Orders. The Operation Fire Prevention Plan, the Hazardous Materials Management Program, and the Emergency Action Plan shall also be submitted to the North County Fire Protection District for review and comment.

Verification: At least 30 days prior to the start of first-fire or commissioning, the project owner shall submit to the CPM for approval a copy of the Project Operations and Maintenance Safety and Health Program. The project owner shall provide a copy of a letter to the CPM from the North County Fire Protection District providing the Fire Department's comments on the Operations Fire Prevention Plan and Emergency Action Plan.

WORKER SAFETY-3 The project owner shall provide a site Construction Safety Supervisor (CSS) who, by way of training and/or experience, is knowledgeable of power plant construction activities and relevant laws, ordinances, regulations, and standards; is capable of identifying workplace hazards relating to the construction activities; and has authority to take appropriate action to assure compliance and mitigate hazards. The CSS shall:

1. have overall authority for coordination and implementation of all occupational safety and health practices, policies, and programs;
2. assure that the safety program for the project complies with Cal/OSHA and federal regulations related to power plant projects;

3. assure that all construction and commissioning workers and supervisors receive adequate safety training;

4. complete accident and safety-related incident investigations and emergency response reports for injuries and inform the CPM of safety-related incidents; and

5. assure that all the plans identified in Conditions of Certification Worker Safety-1 and -2 are implemented.

Verification: At least 30 days prior to the start of site mobilization, the project owner shall submit to the CPM the name and contact information for the Construction Safety Supervisor (CSS). The contact information of any replacement (CSS) shall be submitted to the CPM within one business day.

The CSS shall submit in the Monthly Compliance Report a monthly safety inspection report to include:

- record of all employees trained for that month (all records shall be kept on site for the duration of the project);
- summary report of safety management actions and safety-related incidents that occurred during the month;
- report of any continuing or unresolved situations and incidents that may pose danger to life or health; and
- report of accidents and injuries that occurred during the month.

WORKER SAFETY-4 The project owner shall make payments to the Chief Building Official (CBO) for the services of a Safety Monitor based upon a reasonable fee schedule to be negotiated between the project owner and the CBO. Those services shall be in addition to other work performed by the CBO. The Safety Monitor shall be selected by and report directly to the CBO and will be responsible for verifying that the Construction Safety Supervisor, as required in Condition of Certification **WORKER SAFETY-3**, implements all appropriate Cal/OSHA and Energy Commission safety requirements. The Safety Monitor shall conduct on-site (including linear facilities) safety inspections at intervals necessary to fulfill those responsibilities.

Verification: Prior to the start of construction, the project owner shall provide proof of its agreement to fund the Safety Monitor services to the CPM for review and approval.

WORKER SAFETY-5 The project owner shall ensure that a portable automatic external defibrillator (AED) is located on site during construction and operations and shall implement a program to ensure that workers are properly trained in its use and that the equipment is properly maintained and functioning at all times. During construction and commissioning, the following persons shall be trained in use of the AED and shall be on site whenever the workers that they supervise are on site: the Construction Project Manager or delegate, the Construction Safety Supervisor or delegate, and all shift

foremen. During operations, all power plant employees shall be trained in use of the AED. The training program shall be submitted to the CPM for review and approval.

Verification: At least 30 days prior to the start of site mobilization, the project owner shall submit to the CPM proof that a portable automatic external defibrillator (AED) exists on site and a copy of the training and maintenance program for review and approval.

WORKER SAFETY-6 At least sixty (60) days prior to start of any site activities, the project owner shall provide to the CPM for review and approval either written proof in the form of a legally binding contract with the North County Fire Protection District for private fire response and emergency medical services for the project during construction, commissioning, and operations or written proof that the County of San Diego has designated a fire protection district and that the district will provide the above-mentioned services.

Verification: At least sixty (60) days prior to the start of any site activities, the project owner shall provide proof of fire and EMS services to the CPM for review and approval.

REFERENCES

California Fire Code 1998 – Published by the International Fire Code Institute comprised of the International Conference of Building Officials, the Western Fire Chiefs Association, and the California Building Standards Commission. Whittier, Ca.

NCFPD (North County Fire Protection District) 2008 – Record of conversation with Fire Chief William R. Metcalf, September 29.

OGE 2008a – OGE/S. Thome (tn46770) Application for Certification Orange Grove Energy dated 6/19/08. Submitted to Dockets 6/19/08

TRC 2008f – J. Stenger (tn47854) Data Responses 1-73 dated 8/29/08. Submitted to Dockets 8/29/08

PFD (Pala Fire Department) 2008 – Record of conversation with Fire Chief Anthony Ravago, September 30.

Uniform Fire Code 1997, Vol. 1 – Published by the International Fire Code Institute comprised of the International Conference of Building Officials and the Western Fire Chiefs Association, Whittier, Ca.

U.S. OSHA (United States Occupational Safety and Health Administration). 1993 – Process Safety Management / Process Safety Management Guidelines for Compliance. U.S. Department of Labor, Washington, D.C.

ENGINEERING ASSESSMENT

FACILITY DESIGN

Testimony of Steve Baker

SUMMARY OF CONCLUSIONS

The California Energy Commission staff concludes that the design, construction, and eventual closure of the Orange Grove Project and its linear facilities would likely comply with applicable engineering laws, ordinances, regulations, and standards. The proposed conditions of certification, below, would ensure compliance with these laws, ordinances, regulations, and standards.

INTRODUCTION

Facility design encompasses the civil, structural, mechanical, and electrical engineering design of the Orange Grove Project (OGP). The purpose of this analysis is to:

- verify that the laws, ordinances, regulations, and standards (LORS) that apply to the engineering design and construction of the project have been identified;
- verify that both the project and its ancillary facilities are sufficiently described, including proposed design criteria and analysis methods, in order to provide reasonable assurance that the project will be designed and constructed in accordance with all applicable engineering LORS, in a manner that also ensures the public health and safety;
- determine whether special design features should be considered during final design to address conditions unique to the site which could influence public health and safety; and
- describe the design review and construction inspection process and establish the conditions of certification used to monitor and ensure compliance with the engineering LORS, in addition to any special design requirements.

Subjects discussed in this analysis include:

- identification of the engineering LORS that apply to facility design;
- evaluation of the applicant's proposed design criteria, including identification of criteria essential to public health and safety;
- proposed modifications and additions to the application for certification (AFC) necessary for compliance with applicable engineering LORS; and
- conditions of certification proposed by staff to ensure that the project will be designed and constructed to ensure public health and safety and comply with all applicable engineering LORS.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Lists of LORS applicable to each engineering discipline (civil, structural, mechanical, and electrical) are described in the AFC (OGE 2008a, Appendix 2A; OGE 2008c). Key LORS are listed in **Facility Design Table 1** below.

Facility Design Table 1
Key Engineering Laws, Ordinances, Regulations, and Standards (LORS)

Applicable LORS	Description
Federal	Title 29 Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health standards
State	2007 California Building Standards Code (CBSC) (also known as Title 24, California Code of Regulations)
Local	San Diego County regulations and ordinances
General	American National Standards Institute (ANSI) American Society of Mechanical Engineers (ASME) American Welding Society (AWS) American Society for Testing and Materials (ASTM)

SETTING

The OGP will be located on approximately 8.5 acres in a former citrus grove in rural northern San Diego County (OGE 2008a, AFC §§ 1.1, 1.5.1, 1.7.11, 2.1, 2.2). The site lies in Seismic Risk Zone 4 (OGE 2008a, AFC § 6.3.1.5.2). For more information on the site and related project description, please see the **PROJECT DESCRIPTION** section of this document. Additional engineering design details are contained in the AFC and supplement (OGE 2008a, AFC Appendix 2A; OGE 2008c).

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

The purpose of this analysis is to ensure that the project would be built to applicable engineering codes and ensure public health and life safety. This analysis further verifies that applicable engineering LORS have been identified and that the project and its ancillary facilities have been described in adequate detail. It also evaluates the applicant's proposed design criteria, describes the design review and construction inspection process, and establishes conditions of certification that would monitor and ensure compliance with engineering LORS and any other special design requirements. These conditions allow both the California Energy Commission (Energy Commission) compliance project manager (CPM) and the applicant to adopt a compliance monitoring scheme that will verify compliance with these LORS.

SITE PREPARATION AND DEVELOPMENT

Staff has evaluated the proposed design criteria for grading, flood protection, erosion control, site drainage, and site access, in addition to the criteria for designing and

constructing linear support facilities such as natural gas and electric transmission interconnections. The applicant proposes the use of accepted industry standards (see OGE 2008c for a representative list of applicable industry standards), design practices, and construction methods in preparing and developing the site. Staff concludes that this project, including its linear facilities, would most likely comply with all applicable site preparation LORS and proposes conditions of certification (see below and the **GEOLOGY AND PALEONTOLOGY** subsection of this document) to ensure that compliance.

MAJOR STRUCTURES, SYSTEMS, AND EQUIPMENT

Major structures, systems, and equipment are structures and their associated components or equipment that are necessary for power production; costly or time consuming to repair or replace; used for the storage, containment, or handling of hazardous or toxic materials; or capable of becoming potential health and safety hazards if not constructed according to applicable engineering LORS. Major structures and equipment are identified in the proposed Condition of Certification **GEN-2,** below.

The OGP shall be designed and constructed to the 2007 California Building Standards Code (CBSC), also known as Title 24, California Code of Regulations, which encompasses the California Building Code (CBC), California Building Standards Administrative Code, California Electrical Code, California Mechanical Code, California Plumbing Code, California Energy Code, California Fire Code, California Code for Building Conservation, California Reference Standards Code, and other applicable codes and standards in effect when the design and construction of the project actually begin. If the initial designs are submitted to the chief building official (CBO) for review and approval after the update to the 2007 CBSC takes effect, the 2007 CBSC provisions shall be replaced with the updated provisions.

Certain structures in a power plant may be required, under the CBC, to undergo dynamic lateral force (structural) analysis; others may be designed using the simpler static analysis procedure. In order to ensure that structures are analyzed according to their appropriate lateral force procedure, staff has included Condition of Certification **STRUC-1**, below, which, in part, requires the project CBO's review and approval of the owner's proposed lateral force procedures before construction begins.

PROJECT QUALITY PROCEDURES

The project would be designed and built in conformance with a quality program intended to ensure that its systems and components will be designed, fabricated, stored, transported, installed, and tested in accordance with all appropriate power plant technical codes and standards. Compliance with design requirements will be verified through specific inspections and audits. Implementation of this quality assurance/quality control (QA/QC) program will ensure that the OGP is actually designed, procured, fabricated, and installed as described in this analysis (OGE 2008a, AFC § 2.10).

COMPLIANCE MONITORING

Under Section 104.1 in Appendix Chapter 1 of the CBC, the CBO is authorized and directed to enforce all provisions of the CBC. The Energy Commission itself serves as the building official and has the responsibility to enforce the code for all of the energy

facilities it certifies. In addition, the Energy Commission has the power to interpret the CBC and adopt and enforce both rules and supplemental regulations that clarify application of the CBC's provisions.

The Energy Commission's design review and construction inspection process conforms to CBC requirements and ensures that all facility design conditions of certification are met. As provided by section 103.3 in Appendix Chapter 1 of the CBC, the Energy Commission appoints experts to perform design review and construction inspections and act as delegate CBOs on behalf of the Energy Commission. These delegates typically include the local building official and/or independent consultants hired to provide technical expertise that is not provided by the local official alone. The applicant, through permit fees provided by the CBC, section 108 in Appendix Chapter 1, pays the cost of these reviews and inspections. While building permits in addition to Energy Commission certification are not required for this project, the applicant, consistent with CBC section 108, pays in lieu of CBC permit fees to cover the costs of these reviews and inspections.

Engineering and compliance staff will invite San Diego County or a third-party engineering consultant to act as CBO for this project. When an entity has been assigned CBO duties, Energy Commission staff will complete a memorandum of understanding (MOU) with that entity to outline both its roles and responsibilities and those of its subcontractors and delegates.

Staff has developed proposed conditions of certification to ensure public health and safety and compliance with engineering design LORS. Some of these conditions address the roles, responsibilities, and qualifications of the engineers who will design and build the proposed project (Conditions of Certification **GEN-1** through **GEN-8**). These engineers must be registered in California and sign and stamp every submittal of design plans, calculations, and specifications submitted to the CBO. These conditions require that every element of the project's construction (subject to CBO review and approval) be approved by the CBO before it is performed. They also require that qualified special inspectors perform or oversee special inspections required by all applicable LORS.

While the Energy Commission and delegate CBO have the authority to allow some flexibility in scheduling construction activities, these conditions are written so that no element of construction (of permanent facilities subject to CBO review and approval) that could be difficult to reverse or correct can proceed without prior CBO approval. Elements of construction that are not difficult to reverse may proceed without approval of the plans. The applicant bears the responsibility to fully modify construction elements in order to comply with all design changes resulting from the CBO's subsequent plan review and approval process.

FACILITY CLOSURE

The removal of a facility from service (decommissioning) when it reaches the end of its useful life ranges from "mothballing" to the removal of all equipment and appurtenant facilities and subsequent restoration of the site. Future conditions that could affect decommissioning are largely unknown at this time.

In order to ensure that decommissioning will be completed in a manner that is environmentally sound, safe, and protects the public health and safety, the applicant shall submit a decommissioning plan to the Energy Commission for review and approval before the project's decommissioning begins. The plan shall include a discussion of:

- proposed decommissioning activities for the project and all appurtenant facilities that were constructed as part of the project;
- all applicable LORS and local/regional plans and proof of adherence to those applicable LORS and local/regional plans;
- the activities necessary to restore the site if the plan requires removal of all equipment and appurtenant facilities; and
- decommissioning alternatives other than complete site restoration.

Satisfying the above requirements should serve as adequate protection, even in the unlikely event that the project is abandoned. Staff has proposed general conditions (see **General Conditions**) to ensure that these measures are included in the Facility Closure Plan.

CONCLUSIONS AND RECOMMENDATIONS

1. The laws, ordinances, regulations, and standards (LORS) identified in the AFC and supporting documents directly apply to the project.

2. Staff has evaluated the proposed engineering LORS, design criteria, and design methods in the record, and concludes that the design, construction, and eventual closure of the project will likely comply with applicable engineering LORS.

3. The proposed conditions of certification will ensure that the OGP is designed and constructed in accordance with applicable engineering LORS. This will be accomplished through design review, plan checking, and field inspections that will be performed by the CBO or other Energy Commission delegate. Staff will audit the CBO to ensure satisfactory performance.

4. Though future conditions that could affect decommissioning are largely unknown at this time, it can reasonably be concluded that if the project owner submits a decommissioning plan as required in the **General Conditions** section of this document prior to decommissioning, decommissioning procedures will comply with all applicable engineering LORS.

Energy Commission staff recommends that:

1. The proposed conditions of certification be adopted to ensure that the project is designed and constructed in a manner that protects the public health and safety and complies with all applicable engineering LORS;

2. The project be designed and built to the 2007 CBSC (or successor standards, if in effect when initial project engineering designs are submitted for review); and

3. The CBO reviews the final designs, checks plans, and performs field inspections during construction. Energy Commission staff shall audit and monitor the CBO to ensure satisfactory performance.

CONDITIONS OF CERTIFICATION

GEN-1 The project owner shall design, construct, and inspect the project in accordance with the 2007 California Building Standards Code (CBSC), also known as Title 24, California Code of Regulations, which encompasses the California Building Code (CBC), California Administrative Code, California Electrical Code, California Mechanical Code, California Plumbing Code, California Energy Code, California Fire Code, California Code for Building Conservation, California Reference Standards Code, and all other applicable engineering laws, ordinances, regulations and standards (LORS) in effect at the time initial design plans are submitted to the chief building official (CBO) for review and approval (the CBSC in effect is the edition that has been adopted by the California Building Standards Commission and published at least 180 days previously). The project owner shall ensure that all the provisions of the above applicable codes are enforced during the construction, addition, alteration, moving, demolition, repair, or maintenance of the completed facility (2007 CBC, Appendix Chapter 1, § 101.2, Scope). All transmission facilities (lines, switchyards, switching stations, and substations) are covered in the conditions of certification in the **TRANSMISSION SYSTEM ENGINEERING** section of this document.

In the event that the initial engineering designs are submitted to the CBO when the successor to the 2007 CBSC is in effect, the 2007 CBSC provisions shall be replaced with the applicable successor provisions. Where, in any specific case, different sections of the code specify different materials, methods of construction or other requirements, the most restrictive shall govern. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall govern.

The project owner shall ensure that all contracts with contractors, subcontractors, and suppliers clearly specify that all work performed and materials supplied comply with the codes listed above.

Verification: Within 30 days following receipt of the certificate of occupancy, the project owner shall submit to the compliance project manager (CPM) a statement of verification, signed by the responsible design engineer, attesting that all designs, construction, installation, and inspection requirements of the applicable LORS and the Energy Commission's decision have been met in the area of facility design. The project owner shall provide the CPM a copy of the certificate of occupancy within 30 days of receipt from the CBO (2007 CBC, Appendix Chapter 1, § 110, Certificate of Occupancy).

Once the certificate of occupancy has been issued, the project owner shall inform the CPM at least 30 days prior to any construction, addition, alteration, moving, demolition, repair, or maintenance to be performed on any portion(s) of the completed facility that

requires CBO approval for compliance with the above codes. The CPM will then determine if the CBO needs to approve the work.

GEN-2 Before submitting the initial engineering designs for CBO review, the project owner shall furnish the CPM and the CBO with a schedule of facility design submittals, master drawing, and master specifications lists. The schedule shall contain a list of proposed submittal packages of designs, calculations, and specifications for major structures and equipment. To facilitate audits by Energy Commission staff, the project owner shall provide specific packages to the CPM upon request.

Verification: At least 60 days (or within a project owner- and CBO-approved alternative time frame) prior to the start of rough grading, the project owner shall submit to the CBO and to the CPM the schedule, the master drawing, and master specifications lists of documents to be submitted to the CBO for review and approval. These documents shall be the pertinent design documents for the major structures and equipment listed in **FACILITY DESIGN Table 2,** below. Major structures and equipment shall be added to or deleted from the table only with CPM approval. The project owner shall provide schedule updates in the monthly compliance report.

Facility Design Table 2
Major Structures and Equipment List

Equipment/System	Quantity (Plant)
Combustion Turbine (CT) Foundation and Connections	2
CT Generator Foundation and Connections	2
SCR Catalyst System Structure Foundation and Connections	2
SCR Exhaust Stack Foundation and Connections	2
Tempering Air Fans (Blowers) Foundation and Connections	2
CEMS Station Foundation and Connections	2
CT Auxiliary Skid Foundation and Connections	2
CT Fire Protection System Foundation and Connections	2
SPRINT/Spray Mist Cooler Skid Foundation and Connections	2
NOx Water Injection Skid Foundation and Connections	2
Packaged CT Inlet Air Chiller System Foundation and Connections	1
Chilled Water Pumps Foundation and Connections	1
3-Cell Cooling Tower, Cooling Tower Foundation and Connections	1
Cooling Water Pumps Foundation and Connections	2
Ammonia Delivery Skid Foundation and Connections	4
Offsite Water Booster Pump Station Foundation and Connections	1
Natural Gas Fuel Filter Foundation and Connections	2
Air Compressor Skid Foundation and Connections	1
Step-Up Transformer Foundation and Connections	2
Station Service Transformer Foundation and Connections	2
Auxiliary Transformer Foundation and Connections	2
Service Building Foundation and Connections	1
Wastewater Drainage Sump System Foundation and Connections	1
Demineralized Water Storage Tank Foundation and Connections	1
Demineralized Water Forwarding Pumps Foundation and Connections	1
Reverse Osmosis System Foundations and Connections	1
Raw Water Storage Tank Foundation and Connections	1
Fuel Gas Compressor Foundation and Connections	2
Wastewater Storage Tank Foundation and Connections	1
Reclaim Water Storage Tank Foundation and Connections	1
Containment Tank Foundation and Connections	1
Oil/Water Separator Foundation and Connections	1
Black Start Diesel Generator Foundation and Connections	1

GEN-3 The project owner shall make payments to the CBO for design review, plan checks, and construction inspections, based upon a reasonable fee schedule to be negotiated between the project owner and the CBO. These fees may be consistent with the fees listed in the 2007 CBC (2007 CBC, Appendix Chapter 1, § 108, Fees; Chapter 1, Section 108.4, Permits, Fees, Applications and Inspections), adjusted for inflation and other appropriate adjustments; may be based on the value of the facilities reviewed; may be based on hourly rates; or may be otherwise agreed upon by the project owner and the CBO.

Verification: The project owner shall make the required payments to the CBO in accordance with the agreement between the project owner and the CBO. The project owner shall send a copy of the CBO's receipt of payment to the CPM in the next monthly compliance report indicating that applicable fees have been paid.

GEN-4 Prior to the start of rough grading, the project owner shall assign a California-registered architect, structural engineer, or civil engineer, as the resident engineer in charge of the project (2007 California Administrative Code, § 4-209, Designation of Responsibilities). All transmission facilities (lines, switchyards, switching stations, and substations) are addressed in the conditions of certification in the **TRANSMISSION SYSTEM ENGINEERING** section of this document.

The resident engineer may delegate responsibility for portions of the project to other registered engineers. Registered mechanical and electrical engineers may be delegated responsibility for mechanical and electrical portions of the project, respectively. A project may be divided into parts, provided that each part is clearly defined as a distinct unit. Separate assignments of general responsibility may be made for each designated part.

The resident engineer shall:

1. Monitor progress of construction work requiring CBO design review and inspection to ensure compliance with LORS;

2. Ensure that construction of all facilities subject to CBO design review and inspection conforms in every material respect to applicable LORS, these conditions of certification, approved plans, and specifications;

3. Prepare documents to initiate changes in approved drawings and specifications when either directed by the project owner or as required by the conditions of the project;

4. Be responsible for providing project inspectors and testing agencies with complete and up-to-date sets of stamped drawings, plans, specifications, and any other required documents;

5. Be responsible for the timely submittal of construction progress reports to the CBO from the project inspectors, the contractor, and other engineers who have been delegated responsibility for portions of the project; and

6. Be responsible for notifying the CBO of corrective action or the disposition of items noted on laboratory reports or other tests when they do not conform to approved plans and specifications.

The resident engineer shall have the authority to halt construction and to require changes or remedial work if the work does not meet requirements.

If the resident engineer or the delegated engineers are reassigned or replaced, the project owner shall submit the name, qualifications and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer.

Verification: At least 30 days (or within a project owner- and CBO-approved alternative time frame) prior to the start of rough grading, the project owner shall submit to the CBO for review and approval, the resume and registration number of the resident engineer and any other delegated engineers assigned to the project. The project owner shall notify the CPM of the CBO's approvals of the resident engineer and other delegated engineer(s) within five days of the approval.

If the resident engineer or the delegated engineer(s) is subsequently reassigned or replaced, the project owner has five days to submit the resume and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer within five days of the approval.

GEN-5 Prior to the start of rough grading, the project owner shall assign at least one of each of the following California registered engineers to the project: a civil engineer; a soils, geotechnical, or civil engineer experienced and knowledgeable in the practice of soils engineering; and an engineering geologist. Prior to the start of construction, the project owner shall assign at least one of each of the following California registered engineers to the project: a design engineer who is either a structural engineer or a civil engineer fully competent and proficient in the design of power plant structures and equipment supports; a mechanical engineer; and an electrical engineer. (California Business and Professions Code section 6704 et seq., and sections 6730, 6731 and 6736 require state registration to practice as a civil engineer or structural engineer in California.) All transmission facilities (lines, switchyards, switching stations, and substations) are handled in the conditions of certification in the **TRANSMISSION SYSTEM ENGINEERING** section of this document.

The tasks performed by the civil, mechanical, electrical, or design engineers may be divided between two or more engineers, as long as each engineer is responsible for a particular segment of the project (for example, proposed earthwork, civil structures, power plant structures, equipment support). No segment of the project shall have more than one responsible engineer. The transmission line may be the responsibility of a separate California registered electrical engineer.

The project owner shall submit, to the CBO for review and approval, the names, qualifications, and registration numbers of all responsible engineers assigned to the project (2007 CBC, Appendix Chapter 1, § 104, Duties and Powers of Building Official).

If any one of the designated responsible engineers is subsequently reassigned or replaced, the project owner shall submit the name, qualifications, and registration number of the newly assigned responsible engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer.

A. The civil engineer shall:

1. Review the foundation investigations, geotechnical, or soils reports prepared by the soils engineer, the geotechnical engineer, or by a civil engineer experienced and knowledgeable in the practice of soils engineering;

2. Design (or be responsible for the design of), stamp, and sign all plans, calculations, and specifications for proposed site work, civil works, and related facilities requiring design review and inspection by the CBO. At a minimum, these include: grading; site preparation; excavation; compaction; and construction of secondary containment, foundations, erosion and sedimentation control structures, drainage facilities, underground utilities, culverts, site access roads and sanitary sewer systems; and

3. Provide consultation to the resident engineer during the construction phase of the project and recommend changes in the design of the civil works facilities and changes to the construction procedures.

B. The soils engineer, geotechnical engineer, or civil engineer experienced and knowledgeable in the practice of soils engineering, shall:

1. Review all the engineering geology reports;

2. Prepare the foundation investigations, geotechnical or soils reports containing field exploration reports, laboratory tests, and engineering analysis detailing the nature and extent of the soils that could be susceptible to liquefaction, rapid settlement, or collapse when saturated under load (2007 CBC, Appendix J, § J104.3, Soils Report; Chapter 18, § 1802.2, Foundation and Soils Investigations);

3. Be present, as required, during site grading and earthwork to provide consultation and monitor compliance with requirements set forth in the 2007 CBC, Appendix J, section J105, Inspections, and the 2007 California Administrative Code, section 4-211, Observation and Inspection of Construction (depending on the site conditions, this may be the responsibility of either the soils engineer, the engineering geologist, or both); and

4. Recommend field changes to the civil engineer and resident engineer.

This engineer shall be authorized to halt earthwork and to require changes if site conditions are unsafe or do not conform to the predicted conditions used as the basis for design of earthwork or foundations (2007 CBC, Appendix Chapter 1, § 114, Stop Orders).

C. The engineering geologist shall:

1. Review all the engineering geology reports and prepare a final soils grading report; and

2. Be present, as required, during site grading and earthwork to provide consultation and monitor compliance with the requirements set forth in the 2007 California Administrative Code, section 4-211, Observation and Inspection of Construction (depending on the site conditions, this may be the responsibility of either the soils engineer, the engineering geologist, or both).

D. The design engineer shall:

1. Be directly responsible for the design of the proposed structures and equipment supports;

2. Provide consultation to the resident engineer during design and construction of the project;

3. Monitor construction progress to ensure compliance with engineering LORS;

4. Evaluate and recommend necessary changes in design; and

5. Prepare and sign all major building plans, specifications, and calculations.

E. The mechanical engineer shall be responsible for, and sign and stamp a statement with, each mechanical submittal to the CBO, stating that the proposed final design plans, specifications, and calculations conform to all of the mechanical engineering design requirements set forth in the Energy Commission's decision.

F. The electrical engineer shall:

1. Be responsible for the electrical design of the project; and

2. Sign and stamp electrical design drawings, plans, specifications, and calculations.

Verification: At least 30 days (or within a project owner- and CBO-approved alternative time frame) prior to the start of rough grading, the project owner shall submit

to the CBO for review and approval, resumes and registration numbers of the responsible civil engineer, soils (geotechnical) engineer, and engineering geologist assigned to the project.

At least 30 days (or within a project owner- and CBO-approved alternative time frame) prior to the start of construction, the project owner shall submit to the CBO for review and approval, resumes and registration numbers of the responsible design engineer, mechanical engineer, and electrical engineer assigned to the project.

The project owner shall notify the CPM of the CBO's approvals of the responsible engineers within five days of the approval.

If the designated responsible engineer is subsequently reassigned or replaced, the project owner has five days in which to submit the resume and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO’s approval of the new engineer within five days of the approval.

GEN-6 Prior to the start of an activity requiring special inspection, the project owner shall assign to the project qualified and certified special inspector(s) who shall be responsible for the special inspections required by the 2007 CBC, Chapter 17, Section 1704, Special Inspections; Chapter 17A, Section 1704A, Special Inspections; and Appendix Chapter 1, Section 109, Inspections. All transmission facilities (lines, switchyards, switching stations, and substations) are handled in conditions of certification in the **TRANSMISSION SYSTEM ENGINEERING** section of this document.

A certified weld inspector, certified by the American Welding Society (AWS), and/or American Society of Mechanical Engineers (ASME) as applicable, shall inspect welding performed on site requiring special inspection (including structural, piping, tanks, and pressure vessels).

The special inspector shall:

1. Be a qualified person who shall demonstrate competence, to the satisfaction of the CBO, for inspection of the particular type of construction requiring special or continuous inspection;

2. Observe the work assigned for conformance with the approved design drawings and specifications;

3. Furnish inspection reports to the CBO and resident engineer. All discrepancies shall be brought to the immediate attention of the resident engineer for correction, then, if uncorrected, to the CBO and the CPM for corrective action (2007 CBC, Chapter 17, § 1704.1.2, Report Requirements); and

4. Submit a final signed report to the resident engineer, CBO, and CPM, stating whether the work requiring special inspection was, to the best of

the inspector's knowledge, in conformance with the approved plans, specifications, and other provisions of the applicable edition of the CBC.

Verification: At least 15 days (or within a project owner- and CBO-approved alternative time frame) prior to the start of an activity requiring special inspection, the project owner shall submit to the CBO for review and approval, with a copy to the CPM, the name(s) and qualifications of the certified weld inspector(s) or other certified special inspector(s) assigned to the project to perform one or more of the duties set forth above. The project owner shall also submit to the CPM a copy of the CBO's approval of the qualifications of all special inspectors in the next monthly compliance report.

If the special inspector is subsequently reassigned or replaced, the project owner has five days in which to submit the name and qualifications of the newly assigned special inspector to the CBO for approval. The project owner shall notify the CPM of the CBO's approval of the newly assigned inspector within five days of the approval.

GEN-7 If any discrepancy in design and/or construction is discovered in any engineering work that has undergone CBO design review and approval, the project owner shall document the discrepancy and recommend required corrective actions (2007 CBC, Appendix Chapter 1, § 109.6, Approval Required; Chapter 17, § 1704.1.2, Report Requirements). The discrepancy documentation shall be submitted to the CBO for review and approval. The discrepancy documentation shall reference this condition of certification and, if appropriate, applicable sections of the CBC and/or other LORS.

Verification: The project owner shall transmit a copy of the CBO's approval of any corrective action taken to resolve a discrepancy to the CPM in the next monthly compliance report. If any corrective action is disapproved, the project owner shall advise the CPM, within five days, of the reason for disapproval and the revised corrective action to obtain CBO's approval.

GEN-8 The project owner shall obtain the CBO's final approval of all completed work that has undergone CBO design review and approval. The project owner shall request the CBO to inspect the completed structure and review the submitted documents. The project owner shall notify the CPM after obtaining the CBO's final approval. The project owner shall retain one set of approved engineering plans, specifications, and calculations (including all approved changes) at the project site or at an alternative site approved by the CPM during the operating life of the project (2007 CBC, Appendix Chapter 1, § 106.3.1, Approval of Construction Documents). Electronic copies of the approved plans, specifications, calculations, and marked-up as-builts shall be provided to the CBO for retention by the CPM.

Verification: Within 15 days of the completion of any work, the project owner shall submit to the CBO, with a copy to the CPM, in the next monthly compliance report, (a) a written notice that the completed work is ready for final inspection, and (b) a signed statement that the work conforms to the final approved plans. After storing the final approved engineering plans, specifications, and calculations described above, the project owner shall submit to the CPM a letter stating both that the above documents have been stored and the storage location of those documents.

Within 90 days of the completion of construction, the project owner shall provide to the CBO three sets of electronic copies of the above documents at the project owner's expense. These are to be provided in the form of "read only" files (Adobe .pdf 6.0), with restricted (password-protected) printing privileges, on archive quality compact discs.

CIVIL-1 The project owner shall submit to the CBO for review and approval the following:

1. Design of the proposed drainage structures and the grading plan;
2. An erosion and sedimentation control plan;
3. Related calculations and specifications, signed and stamped by the responsible civil engineer; and
4. Soils, geotechnical, or foundation investigation reports required by the 2007 CBC, Appendix J, section J104.3, Soils Report, and Chapter 18, section 1802.2, Foundation and Soils Investigation.

Verification: At least 15 days (or within a project owner- and CBO-approved alternative time frame) prior to the start of site grading the project owner shall submit the documents described above to the CBO for design review and approval. In the next monthly compliance report following the CBO's approval, the project owner shall submit a written statement certifying that the documents have been approved by the CBO.

CIVIL-2 The resident engineer shall, if appropriate, stop all earthwork and construction in the affected areas when the responsible soils engineer, geotechnical engineer, or the civil engineer experienced and knowledgeable in the practice of soils engineering identifies unforeseen adverse soil or geologic conditions. The project owner shall submit modified plans, specifications, and calculations to the CBO based on these new conditions. The project owner shall obtain approval from the CBO before resuming earthwork and construction in the affected area (2007 CBC, Appendix Chapter 1, § 114, Stop Work Orders).

Verification: The project owner shall notify the CPM within 24 hours when earthwork and construction is stopped as a result of unforeseen adverse geologic/soil conditions. Within 24 hours of the CBO's approval to resume earthwork and construction in the affected areas, the project owner shall provide to the CPM a copy of the CBO's approval.

CIVIL-3 The project owner shall perform inspections in accordance with the 2007 CBC, Appendix Chapter 1, section 109, Inspections, and Chapter 17, section 1704, Special Inspections. All plant site-grading operations, for which a grading permit is required, shall be subject to inspection by the CBO.

If, in the course of inspection, it is discovered that the work is not being performed in accordance with the approved plans, the discrepancies shall be reported immediately to the resident engineer, the CBO, and the CPM (2007 CBC, Chapter 17, § 1704.1.2, Report Requirements). The project owner shall

prepare a written report, with copies to the CBO and the CPM, detailing all discrepancies, non-compliance items, and the proposed corrective action.

Verification: Within five days of the discovery of any discrepancies, the resident engineer shall transmit to the CBO and the CPM a non-conformance report (NCR), and the proposed corrective action for review and approval. Within five days of resolution of the NCR, the project owner shall submit the details of the corrective action to the CBO and the CPM. A list of NCRs, for the reporting month, shall also be included in the following monthly compliance report.

CIVIL-4 After completion of finished grading and erosion and sedimentation control and drainage work, the project owner shall obtain the CBO's approval of the final grading plans (including final changes) for the erosion and sedimentation control work. The civil engineer shall state that the work within his/her area of responsibility was done in accordance with the final approved plans (2007 CBC, Chapter 17, § 1703.2, Written Approval).

Verification: Within 30 days (or within a project owner- and CBO-approved alternative time frame) of the completion of the erosion and sediment control mitigation and drainage work, the project owner shall submit to the CBO, for review and approval, the final grading plans (including final changes) and the responsible civil engineer's signed statement that the installation of the facilities and all erosion control measures were completed in accordance with the final approved combined grading plans and that the facilities are adequate for their intended purposes, along with a copy of the transmittal letter to the CPM. The project owner shall submit a copy of the CBO's approval to the CPM in the next monthly compliance report.

STRUC-1 Prior to the start of any increment of construction of any major structure or component listed in **Facility Design Table 2** of Condition of Certification **GEN-2**, above, the project owner shall submit to the CBO for design review and approval the proposed lateral force procedures for project structures and the applicable designs, plans, and drawings for project structures. Proposed lateral force procedures, designs, plans, and drawings shall be those for the following items (from **Table 2**, above):

1. Major project structures;

2. Major foundations, equipment supports, and anchorage; and

3. Large field-fabricated tanks.

Construction of any structure or component shall not begin until the CBO has approved the lateral force procedures to be employed in designing that structure or component.

The project owner shall:

1. Obtain approval from the CBO of lateral force procedures proposed for project structures;

2. Obtain approval from the CBO for the final design plans, specifications, calculations, soils reports, and applicable quality control procedures. If

there are conflicting requirements, the more stringent shall govern (for example, highest loads, or lowest allowable stresses shall govern). All plans, calculations, and specifications for foundations that support structures shall be filed concurrently with the structure plans, calculations, and specifications (2007 CBC, Appendix Chapter 1, § 109.6, Approval Required);

3. Submit to the CBO the required number of copies of the structural plans, specifications, calculations, and other required documents of the designated major structures prior to the start of on-site fabrication and installation of each structure, equipment support, or foundation (2007 California Administrative Code, § 4-210, Plans, Specifications, Computations and Other Data);

4. Ensure that the final plans, calculations, and specifications clearly reflect the inclusion of approved criteria, assumptions, and methods used to develop the design. The final designs, plans, calculations, and specifications shall be signed and stamped by the responsible design engineer (2007 CBC, Appendix Chapter 1, § 106.3.4, Design Professional in Responsible Charge); and

5. Submit to the CBO the responsible design engineer's signed statement that the final design plans conform to applicable LORS (2007 CBC, Appendix Chapter 1, § 106.3.4, Design Professional in Responsible Charge).

Verification: At least 60 days (or within a project owner- and CBO-approved alternative time frame) prior to the start of any increment of construction of any structure or component listed in **Facility Design Table 2** of Condition of Certification **GEN-2**, above, the project owner shall submit to the CBO the above final design plans, specifications and calculations, with a copy of the transmittal letter to the CPM.

The project owner shall submit to the CPM, in the next monthly compliance report, a copy of a statement from the CBO that the proposed structural plans, specifications, and calculations have been approved and comply with the requirements set forth in applicable engineering LORS.

STRUC-2 The project owner shall submit to the CBO the required number of sets of the following documents related to work that has undergone CBO design review and approval:

1. Concrete cylinder strength test reports (including date of testing, date sample taken, design concrete strength, tested cylinder strength, age of test, type and size of sample, location and quantity of concrete placement from which sample was taken, and mix design designation and parameters);

2. Concrete pour sign-off sheets;

3. Bolt torque inspection reports (including location of test, date, bolt size, and recorded torques);

4. Field weld inspection reports (including type of weld, location of weld, inspection of non-destructive testing procedure and results, welder qualifications, certifications, qualified procedure description or number (ref: AWS); and

5. Reports covering other structural activities requiring special inspections shall be in accordance with the 2007 CBC, Chapter 17, section 1704, Special Inspections, and section 1709.1, Structural Observations.

Verification: If a discrepancy is discovered in any of the above data, the project owner shall, within five days, prepare and submit an NCR describing the nature of the discrepancies and the proposed corrective action to the CBO, with a copy of the transmittal letter to the CPM (2007 CBC, Chapter 17, § 1704.1.2, Report Requirements). The NCR shall reference the condition(s) of certification and the applicable CBC chapter and section. Within five days of resolution of the NCR, the project owner shall submit a copy of the corrective action to the CBO and the CPM.

The project owner shall transmit a copy of the CBO's approval or disapproval of the corrective action to the CPM within 15 days. If disapproved, the project owner shall advise the CPM, within five days, the reason for disapproval, and the revised corrective action necessary to obtain the CBO's approval.

STRUC-3 The project owner shall submit to the CBO design changes to the final plans required by the 2007 CBC, including the revised drawings, specifications, calculations, and a complete description of, and supporting rationale for, the proposed changes, and shall give to the CBO prior notice of the intended filing (2007 CBC, Appendix Chapter 1, § 106.1, Submittal Documents; § 106.4, Amended Construction Documents; 2007 California Administrative Code, § 4-215, Changes in Approved Drawings and Specifications).

Verification: On a schedule suitable to the CBO, the project owner shall notify the CBO of the intended filing of design changes and shall submit the required number of sets of revised drawings and the required number of copies of the other above-mentioned documents to the CBO, with a copy of the transmittal letter to the CPM. The project owner shall notify the CPM, via the monthly compliance report, when the CBO has approved the revised plans.

STRUC-4 Tanks and vessels containing quantities of toxic or hazardous materials exceeding amounts specified in the 2007 CBC, Chapter 3, Table 307.1(2), shall, at a minimum, be designed to comply with the requirements of that chapter.

Verification: At least 30 days (or within a project owner- and CBO-approved alternate time frame) prior to the start of installation of the tanks or vessels containing the above specified quantities of toxic or hazardous materials, the project owner shall submit to the CBO for design review and approval final design plans, specifications, and calculations, including a copy of the signed and stamped engineer's certification.

The project owner shall send copies of the CBO approvals of plan checks to the CPM in the following monthly compliance report. The project owner shall also transmit a copy of

the CBO's inspection approvals to the CPM in the monthly compliance report following completion of any inspection.

MECH-1 The project owner shall submit, for CBO design review and approval, the proposed final design, specifications and calculations for each plant major piping and plumbing system listed in **FACILITY DESIGN Table 2**, Condition of Certification **GEN-2**, above. Physical layout drawings and drawings not related to code compliance and life safety need not be submitted. The submittal shall also include the applicable QA/QC procedures. Upon completion of construction of any such major piping or plumbing system, the project owner shall request the CBO's inspection approval of that construction (2007 CBC, Appendix Chapter 1, § 106.1, Submittal Documents; § 109.5, Inspection Requests; § 109.6, Approval Required; 2007 California Plumbing Code, § 301.1.1, Approvals).

The responsible mechanical engineer shall stamp and sign all plans, drawings, and calculations for the major piping and plumbing systems, subject to CBO design review and approval, and submit a signed statement to the CBO when the proposed piping and plumbing systems have been designed, fabricated, and installed in accordance with all of the applicable laws, ordinances, regulations, and industry standards (2007 CBC, Appendix Chapter 1, § 106.3.4, Design Professional in Responsible Charge), which may include, but are not limited to:

- American National Standards Institute (ANSI) B31.1 (Power Piping Code);
- ANSI B31.2 (Fuel Gas Piping Code);
- ANSI B31.3 (Chemical Plant and Petroleum Refinery Piping Code);
- ANSI B31.8 (Gas Transmission and Distribution Piping Code);
- Title 24, California Code of Regulations, Part 5 (California Plumbing Code);
- Title 24, California Code of Regulations, Part 6 (California Energy Code, for building energy conservation systems and temperature control and ventilation systems);
- Title 24, California Code of Regulations, Part 2 (California Building Code); and
- San Diego County codes.

The CBO may deputize inspectors to carry out the functions of the code enforcement agency (2007 CBC, Appendix Chapter 1, § 103.3, Deputies).

Verification: At least 30 days (or within a project owner- and CBO-approved alternative time frame) prior to the start of any increment of major piping or plumbing construction listed in Facility Design Table 2, Condition of Certification GEN-2, above, the project owner shall submit to the CBO for design review and approval the final plans, specifications, and calculations, including a copy of the signed and stamped

statement from the responsible mechanical engineer certifying compliance with applicable LORS, and shall send the CPM a copy of the transmittal letter in the next monthly compliance report.

The project owner shall transmit to the CPM, in the monthly compliance report following completion of any inspection, a copy of the transmittal letter conveying the CBO's inspection approvals.

MECH-2 For all pressure vessels installed in the plant, the project owner shall submit to the CBO and California Occupational Safety and Health Administration (Cal/OSHA), prior to operation, the code certification papers and other documents required by applicable LORS. Upon completion of the installation of any pressure vessel, the project owner shall request the appropriate CBO and/or Cal/OSHA inspection of that installation (2007 CBC, Appendix Chapter 1, § 109.5, Inspection Requests).

The project owner shall:

1. Ensure that all boilers and fired and unfired pressure vessels are designed, fabricated, and installed in accordance with the appropriate section of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, or other applicable code. Vendor certification, with identification of applicable code, shall be submitted for prefabricated vessels and tanks; and

2. Have the responsible design engineer submit a statement to the CBO that the proposed final design plans, specifications, and calculations conform to all of the requirements set forth in the appropriate ASME Boiler and Pressure Vessel Code or other applicable codes.

Verification: At least 30 days (or within a project owner- and CBO-approved alternative time frame) prior to the start of on-site fabrication or installation of any pressure vessel, the project owner shall submit to the CBO for design review and approval, the above-listed documents, including a copy of the signed and stamped engineer's certification, with a copy of the transmittal letter to the CPM.

The project owner shall transmit to the CPM, in the monthly compliance report following completion of any inspection, a copy of the transmittal letter conveying the CBO's and/or Cal/OSHA inspection approvals.

MECH-3 The project owner shall submit to the CBO for design review and approval the design plans, specifications, calculations, and quality control procedures for any heating, ventilating, air conditioning (HVAC), or refrigeration system. Packaged HVAC systems, where used, shall be identified with the appropriate manufacturer's data sheets.

The project owner shall design and install all HVAC and refrigeration systems within buildings and related structures in accordance with the CBC and other applicable codes. Upon completion of any increment of construction, the project owner shall request the CBO's inspection and approval of that construction. The final plans, specifications, and calculations shall include

approved criteria, assumptions, and methods used to develop the design. In addition, the responsible mechanical engineer shall sign and stamp all plans, drawings, and calculations and submit a signed statement to the CBO that the proposed final design plans, specifications, and calculations conform with the applicable LORS (2007 CBC, Appendix Chapter 1, § 109.3.7, Energy Efficiency Inspections; § 106.3.4, Design Professionals in Responsible Charge).

Verification: At least 30 days (or within a project owner- and CBO-approved alternative time frame) prior to the start of construction of any HVAC or refrigeration system, the project owner shall submit to the CBO the required HVAC and refrigeration calculations, plans, and specifications, including a copy of the signed and stamped statement from the responsible mechanical engineer certifying compliance with the CBC and other applicable codes, with a copy of the transmittal letter to the CPM.

ELEC-1 Prior to the start of any increment of electrical construction for all electrical equipment and systems 480 Volts or higher (see a representative list, below), with the exception of underground duct work and any physical layout drawings and drawings not related to code compliance and life safety, the project owner shall submit, for CBO design review and approval, the proposed final design, specifications, and calculations (2007 CBC, Appendix Chapter 1, § 106.1, Submittal Documents). Upon approval, the above-listed plans, together with design changes and design change notices, shall remain on the site or at another accessible location for the operating life of the project. The project owner shall request that the CBO inspect the installation to ensure compliance with the requirements of applicable LORS (2007 CBC, Appendix Chapter 1, § 109.6, Approval Required; § 109.5, Inspection Requests). All transmission facilities (lines, switchyards, switching stations, and substations) are handled in conditions of certification in the **TRANSMISSION SYSTEM ENGINEERING** section of this document.

A. Final plant design plans shall include:

1. one-line diagrams for the 13.8 kV, 4.16 kV, and 480 V systems; and
2. system grounding drawings.

B. Final plant calculations must establish:

1. short-circuit ratings of plant equipment;
2. ampacity of feeder cables;
3. voltage drop in feeder cables;
4. system grounding requirements;
5. coordination study calculations for fuses, circuit breakers, and protective relay settings for the 13.8 kV, 4.16 kV, and 480 V systems;
6. system grounding requirements; and

7. lighting energy calculations.

C. The following activities shall be reported to the CPM in the monthly compliance report:

1. Receipt or delay of major electrical equipment;

2. Testing or energization of major electrical equipment; and

3. A signed statement by the registered electrical engineer certifying that the proposed final design plans and specifications conform to requirements set forth in the Energy Commission decision.

Verification: At least 30 days (or within a project owner- and CBO-approved alternative time frame) prior to the start of each increment of electrical construction, the project owner shall submit to the CBO for design review and approval the above-listed documents. The project owner shall include in this submittal a copy of the signed and stamped statement from the responsible electrical engineer attesting compliance with the applicable LORS, and shall send the CPM a copy of the transmittal letter in the next monthly compliance report.

REFERENCES

OGE2008a – OGE/S. Thome (tn46770) Application for Certification Orange Grove Energy dated 6/19/08. Submitted to Dockets 6/19/08.

OGE2008c – OGE/S. Thome (tn46979) Supplement to AFC dated 7/8/08. Submitted to Dockets 7/8/08.

GEOLOGY AND PALEONTOLOGY

Testimony of Dal Hunter, Ph.D., C.E.G.

SUMMARY OF CONCLUSIONS

The proposed Orange Grove Project (OGP) is located in an active geologic area of the Peninsular Ranges Geomorphic Province in north-central San Diego County in Southern California. Because of its geologic setting, the site could be subject to intense levels of earthquake-related ground shaking. While the potential for earthquake ground rupture is low, the site is within 50 miles of several active faults. The effects of strong ground shaking would need to be mitigated, to the extent practical, through structural design required by the California Building Code (CBC 2007) and the project geotechnical report. The California Building Code (2007) requires that structures be designed to resist seismic stresses from ground acceleration and, to a lesser extent, liquefaction potential. A preliminary geotechnical investigation has been performed and presents standard engineering design recommendations to be observed during construction.

There are no known viable geologic or mineralogical resources at the proposed OGP site. Regionally, paleontological resources have been documented within Quaternary terrace deposits and older alluvium similar to deposits that underlie the project site, but no significant fossils were found during cursory field explorations at the plant site. Potential impacts would need to be mitigated through worker training and monitoring by qualified paleontologists, as required by Conditions of Certification, **PAL-1** through **PAL-7**.

Based on its independent research and review, California Energy Commission (Energy Commission) staff believes that the potential is low for significant adverse impacts to the project from geologic hazards during its design life and to potential geologic, mineralogic, and paleontologic resources from the construction, operation, and closure of the proposed project. It is staff's opinion that the OGP can be designed and constructed in accordance with all applicable laws, ordinances, regulations, and standards and in a manner that both protects environmental quality and assures public safety, to the extent practical.

INTRODUCTION

In this section, Energy Commission staff discusses the potential impacts of geologic hazards on the proposed OGP project as well as geologic, mineralogic, and paleontologic resources. Staff's objective is to ensure that there would be no consequential adverse impacts to significant geological and paleontological resources during the project construction, operation, and closure and that operation of the plant would not expose occupants to high-probability geologic hazards. A brief geological and paleontological overview is provided. The section concludes with staff's proposed monitoring and mitigation measures for geologic hazards and geologic, mineralogic, and palentologic resources, with the proposed Conditions of Certification.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Applicable laws, ordinances, regulations, and standards (LORS) are listed in the application for certification (AFC) (OGE 2008a). The following briefly describes the current LORS for both geologic hazards and resources and mineralogic and paleontologic resources.

Geology and Paleontology Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable Law	Description
Federal	The proposed OGP is not located on federal land. There are no federal LORS for geologic hazards and resources for this site.
State	
California Building Code (CBC), 2007	The CBC (2007) includes a series of standards that are used in project investigation, design, and construction (including grading and erosion control).
Alquist-Priolo Earthquake Fault Zoning Act, Public Resources Code (PRC), section 2621–2630	Mitigates against surface fault rupture of known active faults beneath occupied structures. Requires disclosure to potential buyers of existing real estate and a 50-foot setback for new occupied buildings. The site is not located within a designated Alquist-Priolo Fault Zone.
The Seismic Hazards Mapping Act, PRC Section 2690–2699	Areas are identified that are subject to the effects of strong ground shaking, such as liquefaction, landslides, tsunamis, and seiches.
PRC, Chapter 1.7, sections 5097.5 and 30244	Regulates removal of paleontological resources from state lands, defines unauthorized removal of fossil resources as a misdemeanor, and requires mitigation of disturbed sites.
Warren-Alquist Act, PRC, sections 25527 and 25550.5(i)	The Warren-Alquist Act requires the Energy Commission to "give the greatest consideration to the need for protecting areas of critical environmental concern, including, but not limited to, unique and irreplaceable scientific, scenic, and educational wildlife habitats; unique historical, archaeological, and cultural sites…" With respect to paleontologic resources, the Energy Commission relies on guidelines from the Society for Vertebrate Paleontology, indicated below.
Society for Vertebrate Paleontology (SVP), 1995	The "Measures for Assessment and Mitigation of Adverse Impacts to Non-Renewable Paleontological Resources: Standard Procedures" is a set of procedures and standards for assessing and mitigating impacts to vertebrate paleontological resources. The measures were adopted in October 1995 by the SVP, a national organization of professional scientists.
Local	
San Diego County Code of Regulatory Ordinances	Title 8, Division 7 establishes need for grading permit and requirements for clearing and grading.
San Diego County General Plan	Part V establishes policies to guide efforts to minimize risk from seismic, flooding, and other geologic hazards.

SETTING

The proposed OGP would be constructed in unincorporated San Diego County on approximately 8.5 acres of currently vacant land within a 202 acre parcel owned by San Diego Gas & Electric (SDG&E). The site is located approximately 0.1 mile north of the intersection of California State Route 76 (SR 76) and Pala Del Norte Road west of the city of Pala in north-central San Diego County. The proposed generating plant would be a peaker facility capable of generating 96 megawatts (MW) of electricity from two natural gas-fired combustion turbine generators during periods of high electrical demand. Auxiliary components would include selective catalytic reduction pollution and carbon monoxide catalyst air emissions control systems, turbine water-injection to reduce nitrous oxide emissions, and a reverse osmosis system to recycle process waste water. A buried 0.3-mile-long electrical transmission connection would connect the facility to an existing SDG&E substation. A 2.4-mile-long natural gas pipeline would supply fuel to the plant. Onsite water distribution and septic leach field pipelines, fence and sound attenuation wall, control building, and storm water runoff retention basin would also be built.

Make-up water for evaporative cooling and other minor in-plant use would come from the Fallbrook Public Utility District and would be trucked to the site.

REGIONAL SETTING

The proposed OGP would be located in an active geologic area of the Peninsular Ranges Geomorphic Province which extends from the Los Angeles Basin in the north some 900 miles south to the tip of Baja California in Mexico (Norris and Webb 1990). The Peninsular Ranges Geomorphic Province varies from approximately 30 to 100 miles in width. The site is located in the north-central portion of San Diego County on the flank of the Sierra Nevada Batholith which rises abruptly to the east. The Peninsular Ranges Geomorphic Province is characterized by primarily Mesozoic volcanic and metamorphic highland and mountain masses on the east, which slope steeply downward to alluvial, colluvial, and uplifted marine deposits along the Pacific Coast to the west.

Mountains of the Peninsular Range are commonly offset by northwest-trending right-lateral strike-slip faults. Some major fault systems found within the Peninsular Range Geomorphic Province are the San Andreas (southern section), San Jacinto (Coyote Creek, Borrego Mountain, and Anza Sections), the Whittier-Elsinore (Coyote Mountain and Julian Sections), and, more locally, the Temecula Section of the Elsinore Fault Zone. Major offshore fault zones to the west of the proposed OGP site include the Newport-Inglewood-Rose Canyon Zone, the Coronado Bank Zone, the San Diego Trough, and the San Clemente Fault.

PROJECT SITE DESCRIPTION

The site proposed for the OGP site lies on poorly to moderately indurated, Quaternary age, alluvial fan deposits which slope moderately to the southeast at a gradient of approximately 10%. The site is surrounded on the north, west, and east by relatively steeply sloping hillsides of Cretaceous gabbro associated with the Sierra Nevada Batholith. SR 76 runs from southwest to northeast along the southern site boundary.

The proposed 2.4-mile-long natural gas line will tap an existing line west of the site. The proposed alignment essentially follows SR 76 crossing younger and older alluvial fan deposits of Quaternary age as well as granitic bedrock.

A closed and abandoned former aggregate mine is present at the toe of the fan in the bed of the San Luis Rey River immediately south of SR 76. An existing SDG&E electrical substation is present north of SR 76, just south of the proposed OGP site.

The proposed site is located in an abandoned citrus grove which reportedly has subsurface irrigation pipelines still in place (OGE 2008a). Site access is obtained from SR 76 via unpaved Pala Del Norte Road. The shallow subsurface beneath the site is composed of a surficial layer of 12 to 18 inches of fine to coarse grained sand and silty sand with cobbles and boulders. This overlies firm to hard sandy lean clay with gravel, cobbles, and boulders to the explored depth of 40 feet below ground surface (bgs) (PSI 2007).

Depth to ground water beneath the site is unknown. Ground water was not encountered in exploration boreholes drilled to 40 feet bgs (PSI 2007).

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

This section considers two types of impacts. The first is geologic hazards, which could impact the proper functioning of the proposed facility and create life/safety concerns. The second is the potential impacts the proposed facility could have on existing geologic, mineralogic, and paleontologic resources in the area.

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

No federal LORS concerning geologic hazards and geologic and mineralogic resources apply to this project. The California Building Standards Code (CBSC) and CBC (2007) provide geotechnical and geological investigation and design guidelines, which engineers must follow when designing a facility. As a result, the criteria used to assess the significance of a geologic hazard include evaluating each hazard's potential impact on the design and construction of the proposed facility. Geologic hazards include faulting and seismicity, liquefaction, dynamic compaction, hydrocompaction, subsidence, expansive soils, landslides, tsunamis, seiches, and others, as may be dictated by site-specific conditions.

The California Environmental Quality Act (CEQA) guidelines, Appendix G, provide a checklist of questions that lead agencies typically address.

- Section (V) (c) includes guidelines that determine if a project will either directly or indirectly destroy a unique paleontological resource or site or a unique geological feature.
- Sections (VI) (a), (b), (c), (d), and (e) focus on whether or not the project would expose persons or structures to geologic hazards.
- Sections (X) (a) and (b) concern the project's effects on mineral resources.

Staff has reviewed geologic and mineral resource maps for the surrounding area, as well as site-specific information provided by the applicant, to determine if geologic and mineralogic resources exist in the area and to determine if operations could adversely affect geologic and mineralogic resources.

Staff reviewed existing paleontologic information and requested records searches from the San Bernardino County Museum, the San Diego Natural History Museum, and the Natural History Museum of Los Angeles County for the site area. Site-specific information generated by the applicant for the proposed OGP project was also reviewed. All research was conducted in accordance with accepted assessment protocol (SVP 1995) to determine whether any known paleontologic resources exist in the general area. If present or likely to be present, Conditions of Certification which outline required procedures to mitigate impacts to potential resources, are proposed as part of the project's approval.

DIRECT/INDIRECT IMPACTS AND MITIGATION

Ground shaking represents the main geologic hazard at this site. This potential hazard can be effectively mitigated through facility design by incorporating recommendations contained in a project geotechnical report. Conditions of Certification **GEN-1, GEN-5,** and **CIVIL-1** in the **FACILITY DESIGN** section should also mitigate these impacts to a less than significant level.

Economic deposits of sand and gravel have been identified and historically mined in the site vicinity. The H.G. Fenton Materials Company formerly produced sand and gravel from quarry pits immediately south of the site in the bed of the San Luis Rey River and the river bed has been assigned the subclassification of Sector D within an area which is regionally designated as Mineral Resource Zone 2 or an area of known or potential economic mineral deposits (CDMG 1996). Energy Commission staff review of the site geotechnical boring (PSI 2007) indicates that there is no potential for economical deposits of aggregate in the areas explored.

No important paleontological resources were observed on the proposed OGP site during the cursory paleontological field survey conducted for the AFC (OGE 2008a). Additionally, records searches conducted by the Natural History Museum of Los Angeles County for the site area did not reveal the presence of known paleontological resources and indicate the likelihood of such resources to be present in the near-surface young alluvium is very low (McLeod 2008). Staff has not yet received a response for a similar request to the San Diego Natural History Museum. Staff considers the probability that paleontological resources would be encountered during grading, excavation, and trenching to be low.

This assessment is based on SVP criteria and the paleontological report appended to the AFC. Proposed Conditions of Certification **PAL-1** to **PAL-7** are designed to mitigate paleontological resource impacts, as discussed above, to less than significant levels. These conditions essentially require a worker education program in conjunction with the monitoring of earthwork activities by a qualified professional paleontologist (a paleontologic resource specialist, or PRS).

The proposed Conditions of Certification allow the Energy Commission's compliance project manager (CPM) and the applicant to adopt a compliance monitoring scheme ensuring compliance with LORS applicable to geologic hazards and the protection of geologic, mineralogic, and paleontologic resources.

Based on the information below, it is staff's opinion that the potential for significant adverse, direct or indirect impacts to the project, from geologic hazards, and to potential geologic, mineralogic, and paleontologic resources, from the proposed project, is low.

GEOLOGICAL HAZARDS

The AFC (OGE 2008a) provides documentation of potential geologic hazards at the proposed OGP plant site, including site-specific subsurface information (PSI 2007). Review of the AFC, coupled with staff's independent research, indicates that the possibility of geologic hazards at the plant site, during its practical design life, is low, and geologic hazards, such as potential for expansive clay soils and settlement due to compressible soils, hydrocompaction, or dynamic compaction, are addressed in the project geotechnical report per CBC (2007) requirements (PSI 2007).

Staff's independent research included the review of available geologic maps, reports, and related data of the proposed OGP plant site. Geological information was available from the California Geological Survey (CGS), California Division of Mines and Geology (CDMG), the U.S. Geological Survey (USGS), and other governmental organizations. Since 2002 the CDMG has been known as the California Geological Survey.

Faulting and Seismicity

Type A faults have slip-rates of $\geq$5 mm per year and are capable of producing an earthquake of magnitude 7.0 or greater. Type B faults have slip-rates of 2 to 5 mm per year and are capable of producing an earthquake of magnitude 6.5 to 7.0. The fault type, potential magnitude, and distance from the proposed OGP site of Type A and B faults within 62 miles (100 kilometers) of the site are summarized in Table 1. The listed fault characteristics were derived from a number of sources (Blake 2000; Jennings and Saucedo 2002; USGS 2006; CDMG 2003; CGS 2002a; SCEC 2006).

Geology and Paleontology Table 2
Active Faults Relative to the OGP Site

Fault Name	Distance From Site (miles)	Maximum Earthquake Magnitude (Mw)	Estimated Peak Site Acceleration (g)	Movement and Strike	Slip Rate mm/yr	Fault Type
Elsinore (Temecula Segment)	4.7	6.8	0.281	Right-Lateral Strike Slip (Northwest)	5.0	A
Elsinore (Julian Segment)	5.7	7.1	0.297	Right-Lateral Strike Slip (Northwest)	5.0	A
Newport – Inglewood (Offshore)	23.2	7.1	0.112	Right-Lateral Strike Slip (Northwest)	1.5	B
Elsinore (Glen Ivy Segment)	24.0	6.8	0.093	Right-Lateral Strike Slip (Northwest)	5.0	A
Rose Canyon (Offshore)	24.4	7.2	0.113	Right-Lateral Strike Slip (Northwest)	1.5	B
San Jacinto - Anza	27.3	7.2	0.104	Right-Lateral Strike Slip (Northwest)	12.0	A
San Jacinto – San Jacinto Valley	28.6	6.9	0.086	Right-Lateral Strike Slip (Northwest)	12.0	A
Earthquake Valley	32.8	6.5	0.062	Right-Lateral Strike Slip (Northwest)	2.0	B
San Jacinto – Coyote Creek	35.4	6.6	0.062	Right-Lateral Strike Slip (Northwest)	4.0	A
San Joaquin Hills	36.5	6.6	0.074	Blind Thrust (Reverse) North	0.5	B
Coronado Bank (Offshore)	40.3	7.6	0.095	Right-Lateral Strike Slip (Northwest)	3.0	B
Chino – Central Ave. (Elsinore)	41.8	6.7	0.070	Right Lateral – Reverse Oblique (Southwest)	1.0	B
Whittier	45.8	6.8	0.057	Right Lateral – Reverse Oblique (Northeast)	2.5	A
San Jacinto – San Bernardino	46.0	6.7	0.053	Right-Lateral Strike Slip (Northwest)	12.0	A
San Andreas – San Bernardino	46.0	6.7	0.053	Right-Lateral Strike Slip (Northwest)	24.0	A
San Andreas – SB – Coachella M-1b-2	47.5	7.5	0.079	Right-Lateral Strike Slip (Northwest)	25.0	A
San Andreas – Whole M-1a	47.5	8.0	0.103	Right-Lateral Strike Slip (Northwest)	34.0	A
San Andreas – SB – Coachella M-2b-2	47.5	7.7	0.088	Right-Lateral Strike Slip (Northwest)	25.0	A
Palos Verdes	48.2	7.3	0.071	Right-Lateral Strike Slip (Northwest)	3.0	B
Newport – Inglewood (LA Basin)	50.1	7.1	0.062	Right-Lateral Strike Slip (Northwest)	1.0	B
Elsinore (Coyote Mountain)	51.0	6.8	0.052	Right-Lateral Strike Slip (Northwest)	4.0	A
Pinto Mountain	53.1	7.2	0.062	Left-Lateral Strike Slip	2.5	B
San Andreas – Coachella M-1c-5	53.6	7.2	0.062	Right-Lateral Strike Slip	25.0	A
San Jacinto - Borrego	53.9	6.6	0.045	Right-Lateral Strike Slip (Northwest)	4.0	A
Burnt Mountain	57.5	6.5	0.040	Right-Lateral Strike Slip (Northwest)	0.6	B
Puente Hills Blind Thrust	58.8	7.1	0.066	Reverse (North)	0.7	B
Cucamonga	59.7	6.9	0.059	Reverse (North)	5.0	B
North Frontal Zone (West)	60.0	7.2	0.069	Reverse (South)	1.0	B
Eureka Peak	60.7	6.4	0.037	Right-Lateral Strike Slip (Northwest)	0.6	B
San Jose	61.6	6.4	0.044	Left Lateral – Reverse Oblique (Northwest)	0.5	B
North Frontal Zone (East)	62.0	6.7	0.052	Reverse (South)	0.5	B

Energy Commission staff reviewed numerous CDMG and USGS publications as well as informational websites in order to gather data on the location, recency, and type of faulting in the project area. No active faults are shown on published maps as crossing the boundary of new construction on the proposed OGP site. The closest mapped faults to the proposed plant site are the Temecula and Julian Segments of the Elsinore Fault Zone at approximately 4.7 and 5.7 miles to the northeast, respectively. These faults are considered active Type A faults because they show Holocene movement of 5.0mm or greater per year. Other major regional faults and fault systems are present both onshore and offshore at distances of 23 miles or more from the proposed OGP site and include the San Jacinto Fault System which is considered to be the most active fault system within the southern Sierra Nevada Batholith.

The Alquist-Priolo Act of 1973 and subsequent California state law (California Code of Regulations 2001) require that all occupied structures be set back 50 feet or more from the surface trace of an active fault. Since no active faults have been documented within the proposed OGP power plant site, setbacks from occupied structures would not be required.

Based on the soil profile generated for this site by the geotechnical investigation, the site soil class is assumed to be seismic Class C (PSI 2007). The estimated peak horizontal ground acceleration for the power plant is 0.78 times the acceleration of gravity (0.78g) for bedrock acceleration based on 2% probability of exceedence in 50 years under 2007 CBC criteria (USGS 2008).

Liquefaction

Liquefaction is a condition in which a saturated cohesionless soil may lose shear strength because of sudden increase in pore water pressure caused by an earthquake. However, the potential for liquefaction of strata deeper than approximately 40 feet below surface is considered negligible due to the increased confining pressure and because geologic strata at this depth are generally too compact to liquefy. The reported deep ground water table of greater than 40 feet would indicate no significant potential for liquefaction and standard penetration testing (blow-counts) reported in the project-specific geotechnical report (PSI 2007) indicate strata beneath the water table are generally too dense to liquefy. Liquefaction potential at the proposed OGP site was also addressed in the project geotechnical report per CBC (2007) and Condition of Certification **GEN-1** requirements.

Lateral Spreading

Lateral spreading of the ground surface can occur within liquefiable beds during seismic events. Lateral spreading generally requires an abrupt change in slope—that is, a nearby steep hillside or deeply eroded stream bank, etc.—but can also occur on gentle slopes such as are present at the project site. Other factors such as distance from the epicenter, magnitude of the seismic event, and thickness and depth of liquefiable layers also affect the amount of lateral spreading. Because the proposed OGP site is not subject to significant liquefaction, the potential for lateral spreading of the site surface during seismic events is negligible.

Dynamic Compaction

Dynamic compaction of soils results when relatively unconsolidated granular materials experience vibration associated with seismic events. The vibration causes a decrease in soil volume, as the soil grains tend to rearrange into a more dense state (an increase is soil density). The decrease in volume can result in settlement of overlying structural improvements. Site specific geotechnical investigation indicates the alluvial deposits which underlie the site are generally too dense to allow significant dynamic compaction (PSI 2007).

Hydrocompaction

Hydrocompaction (also known as hydro-collapse) is generally limited to young soils that were deposited rapidly in a saturated state, most commonly by a flash flood. The soils dry quickly, leaving an unconsolidated, low density deposit with a high percentage of voids. Foundations built on these types of compressible materials can settle excessively, particularly when landscaping irrigation dissolves the weak cementation that is preventing the immediate collapse of the soil structure. Site specific geotechnical investigation indicates alluvial deposits which underlie the site are generally too dense to experience significant hydrocompaction (PSI 2007).

Subsidence

Local subsidence or settlement may occur when areas containing compressible soils are subjected to foundation loads. Site-specific geotechnical investigation indicates the alluvial deposits which underlie the site are generally compacted to a medium-dense to very dense consistency and therefore are considered unlikely to support site-wide subsidence (PSI 2007).

Regional ground subsidence is typically caused by petroleum or ground water withdrawal that increases the effective unit weight of the soil profile, which in turn increases the effective stress on the deeper soils. This results in consolidation or settlement of the underlying soils. The nearest known petroleum or gas fields are located in the Los Angeles Basin roughly 50 miles northwest of the potential project site (CDC 2001), and the site water supply would be provided by a local water purveyor and not by ground water removal from beneath the site. Therefore, subsidence due to petroleum, natural gas, or ground water production is considered very unlikely.

Expansive Soils

Soil expansion occurs when clay-rich soils with an affinity for water exist in place at a moisture content below their plastic limit. The addition of moisture from irrigation, precipitation, capillary tension, water line breaks, etc. causes the clay soils to absorb water molecules into their structure, which in turn causes an increase in the overall volume of the soil. This increase in volume can correspond to excessive movement (heave) of overlying structural improvements. Geotechnical testing at the OGP site indicates potentially expansive soils are present to depths of between 2.5 to 10 feet bgs beneath portions of the site (PSI 2007). Over-excavation, backfill with suitable fill material, and compaction would be necessary beneath foundations and other load

bearing structures in areas of expansive soils to minimize potential shrink-swell movements. This mitigation is detailed in the project geotechnical investigation (PSI 2007).

Landslides

The site selected for the proposed OGP site slopes gently to the south-southwest at a gradient only of approximately 10%. No historic landslides have been mapped in the project vicinity. The crystalline plutonic rocks which form steep hillsides east, west, and north of the site reportedly have high shear strength and are not heavily fractured (OGE 2008a). Therefore the potential for mass wasting in the form of massive rock falls and subsequent run out across the alluvial fan is considered to be low.

Flooding

The Federal Emergency Management Agency (FEMA) has identified the OGP site as lying in Unshaded Zone X, or outside the limits of the 500-year floodplain (FEMA 1996).

Tsunamis and Seiches

Due to the site elevation and distance from the ocean and the absence of large nearby lakes or reservoirs, the potential for impact to the site from tsunamis and seiches is considered to be negligible.

GEOLOGIC, MINERALOGIC, AND PALEONTOLOGIC RESOURCES

Energy Commission staff has reviewed applicable geologic maps, reports, and on-line resources for this area (Blake 2000; CDC 2001; CDMG 2003, 1999, 1998, 1994, 1993, 1990, 1983, 1975, and 1962; CGS 2007 and 2002a and b; Kennedy and Welday 1980; Kennedy and Tan 1977; Kennedy 2000; Tan 2000; Norris and Webb 1990; SCEC 2006; and USGS 2006; OGE 2008a). Staff did not identify any geological or mineralogical resources at the potential energy facility location. Sand and gravel has been historically mined immediately south of the site, however this quarry is no longer in production and the proposed OGP site lies outside the designated mineral resource zone which encompasses the bed of the San Luis Rey River (CDMG 1996). Energy Commission staff review of the geotechnical borings (PSI 2007) did not indicate aggregate potential at the exploration sites.

Energy Commission staff reviewed the paleontological resources assessment in Section 6.8 of the AFC (OGE 2008a). Staff has also reviewed paleontological literature and records searches conducted by the San Diego Natural History Museum (Soetaert 2008), and the Natural History Museum of Los Angeles County (McCleod 2008). No paleontological resources have been documented on the proposed OGP plant site or along the proposed path of offsite facilities.

Although Quaternary alluvial deposits like those which underlie the potential project site, are known to contain a wide variety of vertebrate fossils, none have been identified at the site or within a 1-mile radius of the site. McLeod (2008) reports a tooth from a fossil horse *Equus* was found in the vicinity of Pala but its exact collection location is unknown. Even if on-site construction were to include significant amounts of grading, foundation excavation, and utility trenching, staff considers the probability that paleontological resources would be encountered during such activities to be low. There

is minor potential to encounter significant vertebrate fossils if drilled shaft foundations or other deep excavations are required to support heavily loaded structures. Any fossil brought to the surface by drilling operations would be badly disturbed and out of context as well. Given the relatively small diameter of the borings, and the general scarcity of significant fossils, the chances of intersecting strata bearing significant fossils would seem remote.

The proposed natural gas line would require trenching for 2.4 miles, some of which would include horizontal borings under SR 76. Typically, trenching for gas lines is relatively shallow, in the range of 3 to 5 feet. Much of the alignment has already been disturbed. The southwest half of the alignment is mapped as lying within younger (Holocene) age alluvial flood plain deposits of the San Luis Rey River. Farther to the east the proposed gas line trench would encounter granitic bedrock and then the older Quaternary age alluvial fan deposits of the plant site (Kennedy 2000; Tan 2000). The granitic bedrock has no potential for fossils and the Holocene age flood plain deposits are generally too young (at shallow depth) to harbor paleontologic resources (McLeod 2008).

This assessment is based on SVP criteria, the paleontological report included in the AFC (OGE 2008a), and the independent paleontological assessment of McLeod (2008). Proposed Conditions of Certification **PAL-1** to **PAL-7** are designed to mitigate paleontological resource impacts, as discussed above, to less than significant levels. These conditions essentially require a worker education program in conjunction with the monitoring of earthwork activities by a qualified professional paleontologist (a paleontologic resource specialist, or PRS).

The proposed Conditions of Certification allow the Energy Commission's compliance project manager (CPM) and the applicant to adopt a compliance monitoring scheme ensuring compliance with LORS applicable to geologic hazards and the protection of geologic, mineralogic, and paleontologic resources.

Construction Impacts and Mitigation

The design-level geotechnical investigation, required for the project by the CBC (2007) and Condition of Certification **GEN-1,** provides standard engineering design recommendations for mitigation of earthquake ground shaking and excessive settlement. (See **PROPOSED CONDITIONS OF CERTIFICATION, FACILITY DESIGN.**)

As noted above, no viable geologic or mineralogic resources are known to exist in the vicinity of the proposed OGP construction site, although sand and gravel quarries are present within the bed of the San Luis Rey River. No paleontologic resources have been identified at the site or in the immediate site vicinity or along proposed linears. Construction of the proposed project would include grading, foundation excavation, and utility trenching. Based on the soils profile, SVP assessment criteria, and the depth of the potentially fossiliferous geologic units, staff considers the probability of encountering paleontological resources to be low.

Proposed Conditions of Certification **PAL-1 to PAL-7** are designed to mitigate any paleontological resource impacts, as discussed above, to a less than significant level. If

final project design does not include drilled shafts or other deep excavations that extend into older Quaternary deposits these conditions may not be necessary.

Essentially, Conditions of Certification **PAL-1 to PAL-7** require a worker education program in conjunction with monitoring of earthwork activities by qualified professional paleontologists (paleontologic resource specialist, or PRS). Earthwork is halted any time potential fossils are recognized by either the paleontologist or the worker. When properly implemented, the Conditions of Certification yield a net gain to the science of paleontology since fossils that would not otherwise have been discovered can be collected, identified, studied, and properly curated. A paleontological resource specialist is retained, for the project by the applicant, to produce a monitoring and mitigation plan, conduct the worker training, and provide the monitoring. During the monitoring, the PRS can and often does petition the Energy Commission for a change in the monitoring protocol. Most commonly, this is a request for lesser monitoring after sufficient monitoring has been performed to ascertain that there is little change of finding significant fossils. In other cases, the PRS can propose increased monitoring due to unexpected fossil discoveries or in response to repeated out-of-compliance incidents by the earthwork contractor.

Based upon the literature and archives search, field surveys, and compliance documentation for the proposed OGP, the applicant has offered monitoring and mitigation measures to be followed during the construction of the OGP. Energy Commission staff believes that the facility can also be designed and constructed to minimize the effect of geologic hazards at the site during project design life.

Operation Impacts and Mitigation

Operation of the proposed new gas-fired peaker generating facility should not have any adverse impact on geologic, mineralogic, or paleontologic resources.

CUMULATIVE IMPACTS AND MITIGATION

The proposed OGP is situated in a seismically active geologic environment. Strong ground shaking potential must be mitigated through foundation and structural design as required by the CBC (2007). Expansive soils must be mitigated in accordance with a design-level project geotechnical investigation and proposed Conditions of Certification **GEN-1, GEN-5, and CIVIL-1** under **FACILITY DESIGN**. Paleontological resources have been documented in the general area of the project and in sediments similar to those that are present beneath the proposed site. However, to date, no fossils have been found during field studies of the proposed OGP site. The potential impacts to paleontological resources due to construction activities would be mitigated as required by proposed Conditions of Certification **PAL-1 to PAL-7**.

Staff believes that the potential for significant adverse cumulative impacts to the proposed project from geologic hazards, during the project's design life, is low, and that the potential for impacts to geologic, mineralogic, and paleontologic resources is very low.

Based upon the literature and archives search, field surveys, and compliance documentation for the proposed OGP project, the applicant proposes monitoring and

mitigation measures for construction of the OGP, and staff agrees with the applicant that the project can be designed and constructed to minimize the effects of geologic hazards at the site and that impacts to fossils encountered during construction would be mitigated to levels of insignificance.

The proposed Conditions of Certification allow the Energy Commission CPM and the applicant to adopt a compliance monitoring scheme ensuring compliance with applicable LORS for geologic hazards and geologic, mineralogic, and paleontologic resources.

FACILITY CLOSURE

Facility closure activities are not expected to impact geologic, paleontologic, or mineralogic resources since no such resources are known to exist at the project location. In addition, the decommissioning and closure of the project should not negatively affect geologic, mineralogic, or paleontologic resources since the majority of the ground disturbed during plant decommissioning and closure would have been already disturbed, and mitigated as required, during construction and operation of the project.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

Staff has not received any agency or public comments regarding geologic hazards, mineral resources, or paleontology at this time.

CONCLUSIONS

The applicant should easily be able to comply with applicable LORS, provided that the proposed Conditions of Certification are followed. The design and construction of the project should have no adverse impact with respect to geologic, mineralogic, and paleontologic resources. Staff proposes to ensure compliance with applicable LORS through the adoption of the proposed Conditions of Certification listed below.

PROPOSED CONDITIONS OF CERTIFICATION

General Conditions of Certification with respect to engineering geology are proposed under Conditions of Certification **GEN-1, GEN-5, and CIVIL-1** in the **FACILITY DESIGN** section. Proposed paleontological Conditions of Certification follow. It is staff's opinion that the likelihood of encountering paleontologic resources is low at the plant site and along proposed linear facilities. Staff would consider reducing monitoring intensity, at the recommendation of the project paleontologic resource specialist, following examination of sufficient, representative deep excavations.

PAL-1 The project owner shall provide the compliance project manager (CPM) with the resume and qualifications of its paleontological resource specialist (PRS) for review and approval. If the approved PRS is replaced prior to completion of project mitigation and submittal of the Paleontological Resources Report, the project owner shall obtain CPM approval of the replacement PRS. The project owner shall keep resumes on file for qualified paleontological resource

monitors (PRMs). If a PRM is replaced, the resume of the replacement PRM shall also be provided to the CPM.

The PRS resume shall include the names and phone numbers of references. The resume shall also demonstrate to the satisfaction of the CPM the appropriate education and experience to accomplish the required paleontological resource tasks.

As determined by the CPM, the PRS shall meet the minimum qualifications for a vertebrate paleontologist as described in the Society of Vertebrate Paleontology (SVP) guidelines of 1995. The experience of the PRS shall include the following:

1. Institutional affiliations, appropriate credentials, and college degree;

2. Ability to recognize and collect fossils in the field;

3. Local geological and biostratigraphic expertise;

4. Proficiency in identifying vertebrate and invertebrate fossils; and

5. At least three years of paleontological resource mitigation and field experience in California and at least one year of experience leading paleontological resource mitigation and field activities.

The project owner shall ensure that the PRS obtains qualified paleontological resource monitors to monitor as he or she deems necessary on the project. Paleontologic resource monitors (PRMs) shall have the equivalent of the following qualifications:

- BS or BA degree in geology or paleontology and one year of experience monitoring in California; or
- AS or AA in geology, paleontology, or biology and four years' experience monitoring in California; or
- Enrollment in upper division classes pursuing a degree in the fields of geology or paleontology and two years of monitoring experience in California.

Verification:

1. At least 60 days prior to the start of ground disturbance, the project owner shall submit a resume and statement of availability of its designated PRS for on-site work.

2. At least 20 days prior to ground disturbance, the PRS or project owner shall provide a letter with resumes naming anticipated monitors for the project, stating that the identified monitors meet the minimum qualifications for paleontological resource monitoring required by the condition. If additional monitors are obtained during the project, the PRS shall provide additional letters and resumes to the CPM. The letter shall be provided to the CPM no later than one week prior to the monitor's beginning on-site duties.

3. Prior to the termination or release of a PRS, the project owner shall submit the resume of the proposed new PRS to the CPM for review and approval.

PAL-2 The project owner shall provide to the PRS and the CPM, for approval, maps and drawings showing the footprint of the power plant, construction lay-down areas, and all related facilities. Maps shall identify all areas of the project where ground disturbance is anticipated. If the PRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the PRS and CPM. The site grading plan and plan and profile drawings for the utility lines would be acceptable for this purpose. The plan drawings should show the location, depth, and extent of all ground disturbances and be at a scale between 1 inch = 40 feet and 1 inch = 100 feet. If the footprint of the project or its linear facilities changes, the project owner shall provide maps and drawings reflecting those changes to the PRS and CPM.

If construction of the project proceeds in phases, maps and drawings may be submitted prior to the start of each phase. A letter identifying the proposed schedule of each project phase shall be provided to the PRS and CPM. Before work commences on affected phases, the project owner shall notify the PRS and CPM of any construction phase scheduling changes.

At a minimum, the project owner shall ensure that the PRS or PRM consults weekly with the project superintendent or construction field manager to confirm area(s) to be worked the following week and until ground disturbance is completed.

Verification:

1. At least 30 days prior to the start of ground disturbance, the project owner shall provide the maps and drawings to the PRS and CPM.

2. If there are changes to the footprint of the project, revised maps and drawings shall be provided to the PRS and CPM at least 15 days prior to the start of ground disturbance.

3. If there are changes to the scheduling of the construction phases, the project owner shall submit a letter to the CPM within five days of identifying the changes.

PAL-3 The project owner shall ensure that the PRS prepares, and the project owner submits to the CPM for review and approval, a paleontological resources monitoring and mitigation plan (PRMMP) to identify general and specific measures to minimize potential impacts to significant paleontological resources. Approval of the PRMMP by the CPM shall occur prior to any ground disturbance. The PRMMP shall function as the formal guide for monitoring, collecting, and sampling activities and may be modified with CPM approval. This document shall be used as the basis of discussion when on-site decisions or changes are proposed. Copies of the PRMMP shall reside with the PRS, each monitor, the project owner's on-site manager, and the CPM.

The PRMMP shall be developed in accordance with the guidelines of the Society of Vertebrate Paleontology (SVP 1995) and shall include, but not be limited, to the following:

1. Assurance that the performance and sequence of project-related tasks, such as any literature searches, pre-construction surveys, worker environmental training, fieldwork, flagging or staking, construction monitoring, mapping and data recovery, fossil preparation and collection, identification and inventory, preparation of final reports, and transmittal of materials for curation will be performed according to PRMMP procedures;

2. Identification of the person(s) expected to assist with each of the tasks identified within the PRMMP and the Conditions of Certification;

3. A thorough discussion of the anticipated geologic units expected to be encountered, the location and depth of the units relative to the project when known, and the known sensitivity of those units based on the occurrence of fossils either in that unit or in correlative units;

4. An explanation of why, how, and how much sampling is expected to take place and in what units. Include descriptions of different sampling procedures that shall be used for fine-grained and coarse-grained units;

5. A discussion of the locations of where the monitoring of project construction activities is deemed necessary, and a proposed plan for monitoring and sampling;

6. A discussion of procedures to be followed in the event of a significant fossil discovery, halting construction, resuming construction, and how notifications will be performed;

7. A discussion of equipment and supplies necessary for collection of fossil materials and any specialized equipment needed to prepare, remove, load, transport, and analyze large-sized fossils or extensive fossil deposits;

8. Procedures for inventory, preparation, and delivery for curation into a retrievable storage collection in a public repository or museum, which meet the Society of Vertebrate Paleontology's standards and requirements for the curation of paleontological resources;

9. Identification of the institution that has agreed to receive data and fossil materials collected, requirements or specifications for materials delivered for curation and how they will be met, and the name and phone number of the contact person at the institution; and

10. A copy of the paleontological Conditions of Certification.

Verification: At least 30 days prior to ground disturbance, the project owner shall provide a copy of the PRMMP to the CPM. The PRMMP shall include an affidavit of authorship by the PRS and acceptance of the PRMMP by the project owner evidenced by a signature.

PAL-4 Prior to ground disturbance and for the duration of construction activities involving ground disturbance, the project owner and the PRS shall prepare and conduct weekly CPM-approved training for the following workers: project managers, construction supervisors, foremen and general workers involved with or who operate ground-disturbing equipment or tools. Workers shall not excavate in sensitive units prior to receiving CPM-approved worker training. Worker training shall consist of a CPM-approved video or in-person presentation. The training program may be combined with other training programs prepared for cultural and biological resources, hazardous materials, or other areas of interest or concern. No ground disturbance shall occur prior to CPM approval of the Worker Environmental Awareness Program (WEAP), unless specifically approved by the CPM.

The WEAP shall address the possibility of encountering paleontological resources in the field, the sensitivity and importance of these resources, and legal obligations to preserve and protect those resources.

The training shall include:

1. A discussion of applicable laws and penalties under the law;
2. Good quality photographs or physical examples of vertebrate fossils for project sites containing units of high paleontologic sensitivity;
3. Information that the PRS or PRM has the authority to halt or redirect construction in the event of a discovery or unanticipated impact to a paleontological resource;
4. Instruction that employees are to halt or redirect work in the vicinity of a find and to contact their supervisor and the PRS or PRM;
5. An informational brochure that identifies reporting procedures in the event of a discovery;
6. A WEAP certification of completion form signed by each worker indicating that he/she has received the training; and
7. A sticker that shall be placed on hard hats indicating that environmental training has been completed.

Verification:

1. At least 30 days prior to ground disturbance, the project owner shall submit the proposed WEAP, including the brochure, with the set of reporting procedures for workers to follow.

2. At least 30 days prior to ground disturbance, the project owner shall submit the script and final video to the CPM for approval if the project owner is planning to use a video for interim training.

3. If the owner requests an alternate paleontological trainer, the resume and qualifications of the trainer shall be submitted to the CPM for review and approval prior to installation of an alternate trainer. Alternate trainers shall not conduct training prior to CPM authorization.

4. In the monthly compliance report (MCR), the project owner shall provide copies of the WEAP certification of completion forms with the names of those trained and the trainer or type of training (in-person or video) offered that month. The MCR shall also include a running total of all persons who have completed the training to date.

PAL-5 The project owner shall ensure that the PRS and PRM(s) monitor consistent with the PRMMP all construction-related grading, excavation, trenching, and augering in areas where potential fossil-bearing materials have been identified, both at the site and along any constructed linear facilities associated with the project. In the event that the PRS determines full-time monitoring is not necessary in locations that were identified as potentially fossil bearing in the PRMMP, the project owner shall notify and seek the concurrence of the CPM.

The project owner shall ensure that the PRS and PRM(s) have the authority to halt or redirect construction if paleontological resources are encountered. The project owner shall ensure that there is no interference with monitoring activities unless directed by the PRS. Monitoring activities shall be conducted as follows:

1. Any change of monitoring from the accepted schedule in the PRMMP shall be proposed in a letter or email from the PRS and the project owner to the CPM prior to the change in monitoring and will be included in the monthly compliance report. The letter or email shall include the justification for the change in monitoring and be submitted to the CPM for review and approval.

2. The project owner shall ensure that the PRM(s) keep a daily monitoring log of paleontological resource activities. The PRS may informally discuss paleontological resource monitoring and mitigation activities with the CPM at any time.

3. The project owner shall ensure that the PRS notifies the CPM within 24 hours of the occurrence of any incidents of non-compliance with any paleontological resources Conditions of Certification. The PRS shall recommend corrective action to resolve the issues or achieve compliance with the Conditions of Certification.

4. For any significant paleontological resources encountered, either the project owner or the PRS shall notify the CPM within 24 hours, or Monday

morning in the case of a weekend event, where construction has been halted because of a paleontological find.

The project owner shall ensure that the PRS prepares a summary of monitoring and other paleontological activities placed in the monthly compliance reports. The summary will include the name(s) of PRS or PRM(s) active during the month; general descriptions of training and monitored construction activities; and general locations of excavations, grading, and other activities. A section of the report shall include the geologic units or subunits encountered, descriptions of samplings within each unit, and a list of identified fossils. A final section of the report will address any issues or concerns about the project relating to paleontologic monitoring, including any incidents of non-compliance or any changes to the monitoring plan that have been approved by the CPM. If no monitoring took place during the month, the report shall include an explanation in the summary as to why monitoring was not conducted.

Verification: The project owner shall ensure that the PRS submits the summary of monitoring and paleontological activities in the MCR. When feasible, the CPM shall be notified 10 days in advance of any proposed changes in monitoring different from the plan identified in the PRMMP. If there is any unforeseen change in monitoring, the notice shall be given as soon as possible prior to implementation of the change.

PAL-6 The project owner, through the designated PRS, shall ensure that all components of the PRMMP are adequately performed including collection of fossil materials, preparation of fossil materials for analysis, analysis of fossils, identification and inventory of fossils, the preparation of fossils for curation, and the delivery for curation of all significant paleontological resource materials encountered and collected during project construction.

Verification: The project owner shall maintain in his/her compliance file copies of signed contracts or agreements with the designated PRS and other qualified research specialists. The project owner shall maintain these files for a period of three years after project completion and approval of the CPM-approved paleontological resource report (see Condition of Certification **PAL-7**). The project owner shall be responsible for paying any curation fees charged by the museum for fossils collected and curated as a result of paleontological mitigation. A copy of the letter of transmittal submitting the fossils to the curating institution shall be provided to the CPM.

PAL-7 The project owner shall ensure preparation of a Paleontological Resources Report (PRR) by the designated PRS. The PRR shall be prepared following completion of the ground-disturbing activities. The PRR shall include an analysis of the collected fossil materials and related information and submit it to the CPM for review and approval.

The report shall include, but is not limited to, a description and inventory of recovered fossil materials; a map showing the location of paleontological resources encountered; determinations of sensitivity and significance; and a statement by the PRS that project impacts to paleontological resources have been mitigated below the level of significance.

Verification: Within 90 days after completion of ground-disturbing activities, including landscaping, the project owner shall submit the PRR under confidential cover to the CPM.

Certification of Completion
Worker Environmental Awareness Program
Orange Grove Power Plant Project (08-AFC-4)

This is to certify these individuals have completed a mandatory California Energy Commission-approved Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on cultural, paleontological, and biological resources for all personnel (that is, construction supervisors, crews, and plant operators) working on site or at related facilities. By signing below, the participant indicates that he/she understands and shall abide by the guidelines set forth in the program materials. Include this completed form in the Monthly Compliance Report.

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Cultural Trainer:_____ Signature: _____ Date: ___/___/___

PaleoTrainer: _____ Signature: _____ Date: ___/___/___

Biological Trainer: _____ Signature: _____ Date: ___/___/___

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POWER PLANT EFFICIENCY

Testimony of Erin Bright

SUMMARY OF CONCLUSIONS

The Orange Grove project, if constructed and operated as proposed, would generate a nominal 96 MW of peak electric power. While the project would consume substantial amounts of energy, with an overall project fuel efficiency of approximately 38% lower heating value (LHV) at maximum full load, it would do so in the most efficient manner practicable. The project would not require additional sources of energy supply, would not consume energy in a wasteful or inefficient manner, and would not create significant adverse impacts on energy supplies or resources.

INTRODUCTION

The Energy Commission makes findings as to whether energy use by the Orange Grove project would result in significant adverse impacts on the environment, as defined in the California Environmental Quality Act (CEQA). If the Energy Commission finds that Orange Grove's consumption of energy would create a significant adverse impact, it must determine whether there are any feasible mitigation measures that could eliminate or minimize the impacts. In this analysis, staff addresses the possibility of inefficient and unnecessary consumption of energy.

In order to support the Energy Commission's findings, this analysis will:

- examine whether the facility will likely present any adverse impacts upon energy resources;
- examine whether these adverse impacts are significant; and if so,
- examine whether feasible mitigation measures exist that would eliminate the adverse impacts or reduce them to a level of insignificance.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

No federal, state or local/county laws, ordinances, regulations, and standards apply to the efficiency of this project.

SETTING

Orange Grove Energy, L.P. (Orange Grove Energy) proposes to construct and operate a 96-MW (nominal net output) natural gas fired, simple cycle electrical generating facility in rural San Diego County, California. The Orange Grove project (Orange Grove) would provide peaking power to the San Diego region to support local reliability as a response to a Request for Offers by San Diego Gas & Electric Company (SDG&E).

The applicant intends to operate each of the plant's two GE LM6000PC SPRINT combustion turbine generators no more than 3,200 engine hours per year (6,400 engine hours total), or approximately 36.5% of the year (OGE2008a, AFC §§ 2.3). Each

combustion turbine generator would utilize a mechanical inlet air chiller with a packaged three-cell cooling tower to maintain maximum output and efficiency at escalated temperatures. Natural gas would be conveyed to the plant via a new 10-inch diameter pipeline, 2.4-miles long, to connect with an SDG&E gas transmission main (OGE2008a, AFC §§ 2.1, 2.5.2).

ASSESSMENT OF IMPACTS

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE OF ENERGY RESOURCES

CEQA Guidelines state that the environmental analysis "…shall describe feasible measures which could minimize significant adverse impacts, including where relevant, inefficient and unnecessary consumption of energy" (Cal. Code Regs., tit. 14, § 15126.4[a][1]). Appendix F of the Guidelines further suggests consideration of such factors as the project's energy requirements and energy use efficiency; its effects on local and regional energy supplies and energy resources; its requirements for additional energy supply capacity; its compliance with existing energy standards; and any alternatives that could reduce wasteful, inefficient, and unnecessary consumption of energy (Cal. Code regs., tit. 14, § 15000 et seq., Appendix F).

The inefficient and unnecessary consumption of energy, in the form of non-renewable fuels such as natural gas and oil, constitutes an adverse environmental impact. An adverse impact can be considered significant if it results in:

- adverse effects on local and regional energy supplies and energy resources;
- a requirement for additional energy supply capacity;
- noncompliance with existing energy standards; or
- the wasteful, inefficient, and unnecessary consumption of fuel or energy.

PROJECT ENERGY REQUIREMENTS AND ENERGY USE EFFICIENCY

At full load operation, Orange Grove is expected to consume natural gas at a rate of 860 million Btu per hour LHV (OGE2008a, AFC Table 2.3-2; Appendix 2C, Figure 2C-1). This is a substantial rate of energy consumption and could potentially impact energy supplies. Under expected project conditions, electricity would be generated at a thermal efficiency of approximately 38% LHV at full load operation (OGE2008a, AFC Table 2.3-2; Appendix 2C, Figure 2C-1).

ADVERSE EFFECTS ON ENERGY SUPPLIES AND RESOURCES

The applicant has described its sources of supply of natural gas for the project in the Application for Certification (OGE2008a, AFC §§ 1.1, 1.5.2, 2.1, 2.5.2). Natural gas for Orange Grove would be supplied by a new 10-inch diameter natural gas transmission pipeline that would connect the plant site to an existing SDG&E gas main. The pipeline would be constructed by Orange Grove Energy, but only the onsite portion would be owned, operated and maintained by Orange Grove Energy. SDG&E would own, operate and maintain the portion of the pipeline running from the main line to the site's metering

station. The SDG&E natural gas supply represents an adequate source for a project of this size; it is highly unlikely that the project could pose a significant adverse impact on natural gas supplies in California.

ADDITIONAL ENERGY SUPPLY REQUIREMENTS

Natural gas fuel would be supplied to the project by SDG&E via a new 10-in diameter high pressure pipeline (OGE2008a, AFC §§ 1.1, 1.5.2, 2.1, 2.5.2). SDG&E is a resource with adequate delivery capacity for a project of this size. There is no real likelihood that Orange Grove would require the development of additional energy supply capacity.

COMPLIANCE WITH ENERGY STANDARDS

No standards apply to the efficiency of Orange Grove or other non-cogeneration projects.

ALTERNATIVES TO REDUCE WASTEFUL, INEFFICIENT, AND UNNECESSARY ENERGY CONSUMPTION

Orange Grove could be deemed to create significant adverse impacts on energy resources if alternatives existed that would reduce the project's use of fuel. Evaluation of alternatives to the project that could reduce wasteful, inefficient, or unnecessary energy consumption first requires examination of the project's energy consumption. Project fuel efficiency, and therefore its rate of energy consumption, is determined by the configuration of the power producing system and by the selection of equipment used to generate power.

Project Configuration

The project objective is to provide additional peak electricity generation to the San Diego region in response to a request for offers by SDG&E. The applicant expects that Orange Grove would operate mostly to meet peak demand and provide local reliability service, allowing SDG&E to meet resource adequacy requirements (OGE2008a, AFC § 1.2, 2.1, 2.3). A simple cycle configuration is consistent with and supports this expectation due to its operating flexibility.

Orange Grove would be configured as two simple cycle power plants in parallel, in which electricity is generated by one natural gas-fired combustion turbine generator (CTG) per plant, two combustion turbine generators total. This configuration, with its short start-up time and fast ramping[1] capability, is well suited to providing peaking power. Further, when reduced output is required, one of the turbine generators can be shut down, allowing the remaining machine to produce half of the full power at optimum efficiency, rather than operating a single, larger machine at an inefficient part load output.

The applicant intends for this facility to operate in peaking duty up to a total of 6,400 engine hours for the two CTGs (3,200 hours per turbine operating at full load). This is equivalent to both of the turbines operating approximately 36.5% of the year (OGE2008a, AFC § 2.3, 2.4; Table 2.3-2). While the applicant may design the project,

[1] "Ramping" is increasing and decreasing electrical output to meet fluctuating load requirements.

and acquire air emissions offsets, to operate several thousand hours annually, history shows that actual dispatch will likely limit project operation to only two hundred or three hundred hours annually (the historical average capacity factor of peaker plants in California is less than 5%[2]).

Equipment Selection

Modern gas turbines embody the most fuel-efficient electric generating technology available today. The applicant would employ two General Electric LM6000PC SPRINT gas turbine generators (OGE2008a, AFC § 1.1, 2.3.1). The LM6000PC SPRINT gas turbine to be employed at Orange Grove represents one of the most modern and efficient such machines now available. The SPRINT version of this machine is nominally rated at 50 MW and 40.3% efficiency LHV at ISO[3] conditions (GTW 2008). This rating differs from the projected efficiency for Orange Grove of 38% LHV because of efficiency losses from parasitic loads and increased flow losses due to the selective catalytic reduction units used on the exhaust of each unit.

Efficiency of Alternatives to the Project

Alternative Generating Technologies

Alternative generating technologies for Orange Grove are considered in the AFC (OGE2008a, AFC § 5.6). Fossil fuels (oil and coal), biomass, geothermal, hydroelectric, solar, and wind technologies are all considered. Biomass and fossil fuels other than natural gas cannot meet air quality limitations. Renewables require more physical area and are not always available when peaking power is needed. Given the project objectives, location, and air pollution control requirements, staff agrees with the applicant that only natural gas-burning technologies are feasible.

Natural Gas-Burning Technologies

Fuel consumption is one of the most important economic factors in selecting an electric generator; fuel typically accounts for over two-thirds of the total operating costs of a fossil-fired power plant (Power 1994). Under a competitive power market system, where operating costs are critical in determining the competitiveness and profitability of a power plant, the plant owner is thus strongly motivated to purchase fuel-efficient machinery.

Capital cost is also important in selecting generating machinery. Recent progress in the development of gas turbines, incorporating technological advances made in the development of aircraft (jet) engines, combined with the cost advantages of assembly-line manufacturing, has made available machines that not only offer the lowest available fuel costs, but at the same time sell for the lowest per-kilowatt capital cost.

The applicant plans to employ two General Electric LM6000PC SPRINT gas turbine generators (OGE2008a, AFC § 1.1, 2.3.1). The SPRINT version of this machine is

[2] As shown in Efficiency Table 1 of the Final Staff Assessment for the Chula Vista Energy Upgrade Project (Docket 07-AFC-4).

[3] International Standards Organization (ISO) standard conditions are 15°C (59°F), 60% relative humidity, and one atmosphere of pressure (equivalent to sea level).

nominally rated at 50 MW and 40.3% efficiency LHV at ISO[4] conditions (GTW 2008). (Staff compares alternative machines' ISO ratings as a common baseline, since project-specific ratings are not available for the alternative machines.) Alternative machines that can meet the project's objectives are the SGT-800 and FT8 TwinPac which, like the LM6000, are aeroderivative machines, adapted from Siemens Power Generation and Pratt & Whitney aircraft engines, respectively.

The Siemens SGT-800 gas turbine generator in a simple cycle configuration is nominally rated at 47 MW and 37.5% LHV at ISO conditions (GTW 2008).

The Pratt & Whitney FT8 TwinPac gas turbine generator in a simple cycle configuration is nominally rated at 51 MW and 38.4% LHV at ISO conditions (GTW 2008).

Machine	Generating Capacity (MW)	ISO Efficiency (LHV)
GE LM6000PC SPRINT	**50**	**40.3 %**
Siemens SGT-800	47	37.5 %
P & W FT8 TwinPac	51	38.4 %

Source: GTW 2008

The LM6000PC SPRINT is further enhanced by the incorporation of spray intercooling (thus the name, SPRay INTercooling). This takes advantage of the aeroderivative machine's two-stage compressor.[5] By spraying water into the airstream between the two compressor stages, the partially compressed air is cooled, reducing the amount of work that must be performed by the second stage compressor. This reduces the power consumed by the compressor, yielding greater net power output and higher fuel efficiency. The benefits in generating capacity and fuel efficiency increase with rising ambient air temperatures (GTW 2000).

While the LM6000 enjoys a slight advantage in fuel efficiency over the alternative machines, any differences among the three in actual operating efficiency would be relatively insignificant. Other factors such as generating capacity, cost, and ability to meet air pollution limitations are some of the factors considered in selecting the turbine model.

Inlet Air Cooling

A further choice of alternatives involves the selection of gas turbine inlet air-cooling methods.[6] The two commonly used techniques are the evaporative cooler, or fogger, and the chiller (mechanical or absorption); both techniques increase power output by cooling the gas turbine inlet air. In general terms, a mechanical chiller can offer greater power output than the evaporative cooler on hot, humid days, but consumes electric

4 International Standards Organization (ISO) standard conditions are 15°C (59°F), 60% relative humidity, and one atmosphere of pressure (equivalent to sea level).

5 The larger industrial type gas turbines typically are single-shaft machines, with single-stage compressor and turbine. Aeroderivatives are two-shaft (or, in some cases, three-shaft) machines, with two-stage (or three-stage) compressors and turbines.

6 A gas turbine's power output decreases as ambient air temperatures rise. The LM6000 SPRINT produces peak power at 50°F; this peak output can be maintained in much hotter weather by cooling the inlet air.

power to operate its refrigeration process, thus slightly reducing overall net power output and, thus, overall efficiency. An absorption chiller uses less electric power, but necessitates the use of a substantial inventory of ammonia. An evaporative cooler or a fogger boosts power output best on dry days; it uses less electric power than a mechanical chiller, possibly yielding slightly higher operating efficiency. The difference in efficiency among these techniques is relatively insignificant.

The applicant proposes to employ a mechanical chiller with a three-cell evaporative cooling tower to cool the chiller condensers (OGE2008a, AFC §§ 2.3.1, 5.10). Given the relative lack of clear superiority of one system over the other, staff agrees that the applicant's approach would yield no significant adverse energy impacts. However, staff believes that the dry cooling option identified by the applicant (OGE2008a, AFC § 5.10), in which a dry cooling tower would replace the evaporative cooling tower for the chiller condensers, would also result in no significant adverse energy impacts, but would reduce other project impacts such as water use.

In conclusion, the project configuration (simple cycle) and generating equipment chosen appear to represent the most efficient feasible combination to satisfy the project objectives. There are no alternatives that could significantly reduce energy consumption.

CUMULATIVE IMPACTS

No nearby projects have been identified that could potentially combine with the Orange Grove project to create cumulative impacts on natural gas resources. SDG&E is a resource with adequate delivery capacity for a project of this size. Staff believes the SDG&E system is capable of supplying Orange Grove without adversely impacting its other natural gas customers.

NOTEWORTHY PROJECT BENEFITS

The applicant expects Orange Grove to help meet anticipated local electricity generation requirements for the San Diego region. By doing so in a fuel-efficient manner with GE LM6000 SPRINT gas turbines, one of the most modern and efficient such machines now available, the Orange Grove project would benefit electric consumers in California.

CONCLUSIONS

The project, if constructed and operated as proposed, would generate a nominal 96 MW of peaking electric power, at an overall project fuel efficiency of approximately 38% LHV at maximum full load. While it would consume substantial amounts of energy, it would do so in the most efficient manner practicable. It would not create significant adverse effects on energy supplies or resources, would not require additional sources of energy supply, and would not consume energy in a wasteful or inefficient manner. No energy standards apply to the project. Staff therefore concludes that the project would present no significant adverse impacts upon energy resources. No cumulative impacts on energy resources are likely.

PROPOSED CONDITIONS OF CERTIFICATION

No conditions of certification are proposed.

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POWER PLANT RELIABILITY

Testimony of Erin Bright

SUMMARY OF CONCLUSIONS

The applicant predicts an equivalent availability factor of 97.7%, which staff believes is achievable. Based on a review of the proposal, staff concludes that the Orange Grove project would be built and operated in a manner consistent with industry norms for reliable operation. This should provide an adequate level of reliability. No conditions of certification are proposed.

INTRODUCTION

In this analysis, Energy Commission staff addresses the reliability issues of the proposed Orange Grove project to determine if the power plant is likely to be built in accordance with applicable laws, ordinances, regulations, and standards (LORS) and with typical industry norms for reliability of power generation. Staff uses this level of reliability as a benchmark because it ensures that the resulting project would likely not degrade the overall reliability of the electric system it serves (see the "Setting" subsection below).

The scope of this power plant reliability analysis covers:

- equipment availability;
- plant maintainability;
- fuel and water availability; and
- power plant reliability in relation to natural hazards.

Staff examined the project design criteria to determine if the project is likely to be built in accordance with applicable LORS and with typical industry norms for reliability of power generation. While Orange Grove Energy, L.P. has predicted an equivalent availability factor approaching 98% for the Orange Grove project (Orange Grove) (see below), staff uses typical industry norms as a benchmark, rather than the applicant's projection, to evaluate the project's reliability.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Although no federal, state, or local/county LORS apply to the reliability of this project, recently adopted laws and regulations influence the project's operational requirements (see "Setting," below).

SETTING

In the restructured competitive electric power industry, the responsibility for maintaining system reliability falls largely to the state's control area operators, such as the California Independent System Operator (California ISO), that purchase, dispatch, and sell electric power throughout the state. Determining how the California ISO and other control area

operators would ensure system reliability has been an ongoing process; protocols have been developed and put in place allowing sufficient reliability to be maintained under the competitive market system. “Must-run” power purchase agreements and “participating generator” agreements, for example, are two mechanisms that have been employed to ensure an adequate supply of reliable power.

In September 2005, California AB 380 (Núñez, Chapter 367, Statutes of 2005) became law. This modification to the Public Utilities Code requires the California Public Utilities Commission to consult with the California ISO to establish resource adequacy requirements for all load-serving entities (basically, public and privately owned utility companies). These requirements include maintaining a minimum reserve margin (extra generating capacity to serve in times of equipment failure or unexpected demand) and maintaining sufficient local generating resources to satisfy the load-serving entity’s peak demand and operating reserve requirements.

In order to fulfill this mandate, the California ISO has begun to establish specific criteria for each load-serving entity under its jurisdiction. These criteria guide each load-serving entity in deciding how much generating capacity and ancillary services to build or purchase, after which the load-serving entity issues power purchase agreements to satisfy these needs. Orange Grove acquired its power purchase agreement from San Diego Gas and Electric Company (SDG&E) as a result of SDG&E’s plans to meet reliability requirements imposed by the California ISO.

The California ISO’s mechanisms to ensure adequate power plant reliability apparently were devised under the assumption that the individual power plants that compete to sell power into the system would each exhibit a level of reliability similar to that of power plants of past decades. However, there has been valid cause to believe that, under free market competition, financial pressures on power plant owners to minimize capital outlays and maintenance expenditures may act to reduce the reliability of many power plants, both existing and newly constructed (McGraw-Hill 1994). It is possible that, if significant numbers of power plants were to exhibit individual reliability sufficiently lower than this historical level, the assumptions used by California ISO to ensure system reliability would prove invalid, with potentially disappointing results. Accordingly, staff has recommended that power plant owners continue to build and operate their projects to the level of reliability to which all in the industry are accustomed.

As part of its plan to provide needed reliability, the applicant proposes to operate a 96-MW (nominal output) simple cycle peaking power plant to support increasing local demand in the San Diego region (OGE2008A, AFC §§ 1.2, 2.1, 2.3). Orange Grove is expected to achieve an equivalent availability factor of 97.7% (OGE2008A, AFC §§ 2.3.1, 2.10.1).

ASSESSMENT OF IMPACTS

METHOD FOR DETERMINING RELIABILITY

The Energy Commission must make findings as to the manner in which the project is to be designed, sited, and operated to ensure safe and reliable operation (Cal. Code Regs., tit. 20, § 1752[c]). Staff takes the approach that a project is acceptable if it does

not degrade the reliability of the utility system to which it is connected. This is likely the case if the project exhibits reliability at least equal to that of other power plants on that system.

The equivalent availability factor for a power plant is the percentage of the time that it is available to generate power; both planned and unplanned outages subtract from its availability. Measures of power plant reliability are based on its actual ability to generate power when it is considered available and are affected by starting failures and unplanned, or forced, outages. For practical purposes, reliability can be considered a combination of these two industry measures, making a reliable power plant one that is available when called upon to operate. Throughout its intended 25-year life (OGE2008A, AFC § 4.0), Orange Grove would be expected to perform reliably. Power plant systems must be able to operate for extended periods without shutting down for maintenance or repairs. Achieving this reliability is accomplished by ensuring adequate levels of equipment availability, plant maintainability with scheduled maintenance outages, fuel and water availability, and resistance to natural hazards. Staff examines these factors for the project and compares them to industry norms. If they compare favorably, staff can conclude that the power plant would be as reliable as other power plants on the electric system and would therefore not degrade system reliability.

EQUIPMENT AVAILABILITY

Equipment availability would be ensured by use of appropriate quality assurance/quality control (QA/QC) programs during design, procurement, construction, and operation of the plant and by providing for adequate maintenance and repair of the equipment and systems (discussed below).

Quality Control Program

Equipment would be purchased from qualified suppliers, based on technical and commercial evaluations. Suppliers' personnel, production capability, past performance, QA programs, and quality history would be evaluated. The project owner would perform receipt inspections, test components, and administer independent testing contracts. Staff expects implementation of this program to yield typical reliability of design and construction. To ensure such implementation, staff has proposed appropriate conditions of certification under the **FACILITY DESIGN** section of this document.

PLANT MAINTAINABILITY

Equipment Redundancy

A peaking generating facility commonly offers adequate opportunity for maintenance work during its downtime; the applicant proposes to operate Orange Grove no more than 6,400 machine-hours per year, or about 36% of the year (OGE2008A, AFC §§ 2.3, 2.4). During periods of extended dispatch, however, as could occur if other major generating or transmission assets were disabled, the facility may be required to operate for extended periods. A typical approach for achieving reliability in such circumstances is to provide redundant examples of those pieces of equipment most likely to require service or repair.

The applicant plans to provide appropriate redundancy of function for the project. The fact that the project consists of two combustion turbine-generators operating in parallel as independent equipment trains provides inherent reliability. A single equipment failure cannot disable more than one train, thus allowing the plant to continue to generate (at reduced output). In addition, all plant ancillary systems are also designed with adequate redundancy to ensure continued operation in the face of equipment failure (OGE2008A, AFC §§ 2.10.1, 2.12; Table 2.3-1). Staff believes that equipment redundancy would be sufficient for a project such as this.

Maintenance Program

Equipment manufacturers provide maintenance recommendations with their products; the applicant would base its maintenance program on these recommendations. The program would encompass preventive and predictive maintenance techniques. Maintenance outages would be planned for periods of low electricity demand. In light of these plans, staff expects that the project would be adequately maintained to ensure acceptable reliability.

FUEL AND WATER AVAILABILITY

For any power plant, the long-term availability of fuel and of water for cooling or process use is necessary to ensure reliability. The need for reliable sources of fuel and water is obvious; lacking long-term availability of either source, the service life of the plant may be curtailed, threatening the supply of power as well as the economic viability of the plant.

Fuel Availability

Orange Grove would burn natural gas supplied by SDG&E. Natural gas fuel would be supplied to the project via a new 2.4 mile long, 10-inch diameter pipeline from SDG&E's existing T-1600 transmission line (OGE2008A, AFC §§ 1.1, 1.5.2, 2.1, 2.5.2). The SDG&E natural gas system represents a resource of considerable capacity and offers access to adequate supplies of gas. Staff agrees with the applicant's prediction that there would be adequate natural gas supply and pipeline capacity to meet the project's needs.

Water Supply Reliability

Orange Grove would obtain both recycled and fresh water from the Fallbrook Public Utility District and would have this water trucked in to the site. No water pipelines are planned. The applicant estimates that the plant would require two trucks, one each for recycled and fresh water, delivering once per hour to satisfy water needs during full load plant operation, approximately 60 days per year.

Recycled water would be stored in a 414,000 gallon water storage tank and would serve as cooling tower makeup to cool the gas turbine inlet air chillers. Fresh water would be stored in a 535,000 gallon water storage tank and would serve as makeup for various systems including sanitation, fire, and demineralized water. Demineralized water would be stored in a separate 100,000 gallon storage tank and would be used for gas turbine SPRINT injection water and combustor injection water for NOx emission control (OGE2008a, AFC §§ 1.1, 2.6.2). The water storage planned for the plant equates

to 45.4 hours of full load operation, or a little less than four 12-hour days. The applicant reports that some reclaimed water could be could be treated and used in place of fresh water, in the case of an interruption in water delivery, to allow for an additional 39.4 hours of full load operation, or a total of approximately seven 12-hour days of continuous full load operation (OGE2008a, AFC §§ 2.6.2, 2.10.1).

Staff believes these sources, given the on-site storage capacity, yield sufficient likelihood of a reliable supply of water. (For further discussion of water supply, see the **SOIL AND WATER RESOURCES** section of this document.)

POWER PLANT RELIABILITY IN RELATION TO NATURAL HAZARDS

Natural forces can threaten the reliable operation of a power plant. High winds, tsunamis (tidal waves), and seiches (waves in inland bodies of water) would not likely represent a hazard for this project, but seismic shaking (earthquake) and flooding may present credible threats to reliable operation.

Seismic Shaking

The site lies in Seismic Risk Zone 4 and is located in a zone of seismic activity (OGE2008A, AFC § 6.3.1.5.2); see the **GEOLOGY AND PALEONTOLOGY** section of this document. The project would be designed and constructed to the Seismic Zone 4 standards of the latest appropriate LORS (OGE2008A, AFC §§ 2.10.3, 6.3.1).

Compliance with current LORS applicable to seismic design represents an upgrading of performance during seismic shaking compared to older facilities, due to the fact that these LORS have been periodically and continually upgraded. By virtue of being built to the latest seismic design LORS, this project would likely perform at least as well as, and perhaps better than, existing plants in the electric power system. Staff has proposed conditions of certification to ensure this; see the **FACILITY DESIGN** section of this document. In light of the historical performance of California power plants and the electrical system in seismic events, staff believes there is no special concern with power plant functional reliability affecting the electric system's reliability due to seismic events.

Flooding

The site, except for a portion of the gas pipeline, does not lie within either a 100-year or 500-year floodplain (OGE2008A, AFC §§ 6.3.1.6.3, 6.5.2.1.2). Staff believes there should be no significant concerns with power plant functional reliability due to flooding. For further discussion, see the **SOIL AND WATER RESOURCES** and **GEOLOGY AND PALEONTOLOGY** sections of this Staff Assessment.

COMPARISON WITH EXISTING FACILITIES

The North American Electric Reliability Corporation (NERC) keeps industry statistics for availability factors (as well as many other related reliability data). NERC continually polls utility companies throughout the North American continent on project reliability data through its Generating Availability Data System and periodically summarizes and

publishes the statistics on the Internet (http://www.nerc.com). NERC reports the following summary generating unit statistics for the years 2002 through 2006 (NERC 2007):

- for Gas Turbine units (50 MW and larger):
  - Equivalent Availability Factor = 91.82%

The gas turbines that will be employed in the project have been on the market for several years and can be expected to exhibit typically high availability. The applicant's prediction of an annual availability factor approaching 98% (OGE2008A, AFC §§ 2.3.1, 2.10.1) appears reasonable compared to the NERC figure for similar plants throughout North America (see above). In fact, these new machines can well be expected to outperform the fleet of various (mostly older) gas turbines that make up the NERC statistics. Further, since the plant would consist of two parallel gas turbine generating trains, maintenance can be scheduled during those times of year when the full plant output is not required to meet market demand, typical of industry standard maintenance procedures. The applicant's estimate of plant availability, therefore, appears realistic. The stated procedures for assuring design, procurement, and construction of a reliable power plant appear to follow industry norms, and staff believes they are likely to yield an adequately reliable plant.

NOTEWORTHY PROJECT BENEFITS

The applicant proposes to provide peaking power to serve the needs of the San Diego Region, to meet SDG&E resource adequacy requirements, and to provide additional local generating capacity (OGE2008A, AFC §§ 1.2, 2.1, 2.3). The fact that the project consists of two combustion turbine generators configured as independent equipment trains provides inherent reliability. A single equipment failure cannot disable more than one train, thus allowing the plant to continue to generate (at reduced output). In light of this and the additional reliability-enhancing features of the project described above, the applicant's prediction of an equivalent availability factor approaching 98% appears achievable. Staff believes this should provide an adequate level of reliability.

CONCLUSION

Orange Grove predicts an equivalent availability factor of 97.7%, which staff believes is achievable. Based on a review of the proposal, staff concludes that the plant would be built and operated in a manner consistent with industry norms for reliable operation. This should provide an adequate level of reliability. No conditions of certification are proposed.

PROPOSED CONDITIONS OF CERTIFICATION

No conditions of certification are proposed.

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TRANSMISSION SYSTEM ENGINEERING

Testimony of Ajoy Guha, P. E. and Mark Hesters

SUMMARY OF CONCLUSIONS

The proposed interconnection facilities for the Orange Grove Project (OGP) including the direct interconnection facilities (the 69 kV switchyard, the generator underground cable tie line to the existing San Diego Gas &Electric (SDG&E) Pala 69 kV substation and its termination),as well as the SDG&E network upgrades and changes would be adequate in accordance with industry standards and good utility practices, and are acceptable to staff according to engineering Laws, Ordinances, Regulations and Standards (LORS).

The System Impact Study (SIS) and Facilities Study (FS) report indicate that there would be adverse impacts on the SDG&E transmission system caused by the addition of the OGP. The interconnection of the OGP causes overloads violations under contingency conditions, as well as frequency and voltage deviations during transient system conditions due to faults. The mitigation plan identified in the SIS and FS report would eliminate the adverse impacts, and involves Special Protection Systems, downstream network upgrades. In order to comply with California Environmental Quality Act (CEQA) the downstream network upgrades, the reconductoring of the Pala-Monserate 69 kV line and one span of the Monserate-Monserate Tap 69 kV line with higher size conductors, require environmental analysis sufficient to meet the CEQA requirements for indirect project impacts.

The California Independent System Operator (California ISO) instead of issuing final approval letter would perform an Operational study/procedure examining the impacts of the OGP on the grid based on the expected May 31, 2009 Commercial operation date (COD).The OGP would, therefore, conform to the applicable laws, ordinances, regulations and standards (LORS) and CEQA review upon satisfactory compliance of the recommended Conditions of Certifications.

The OGP, as a local generator, would meet the increasing load demand in northern San Diego County, provide additional reactive power and voltage support in the local network, enhance reliability and may reduce system losses in the SDG&E local network.

INTRODUCTION

The Transmission System Engineering (TSE) analysis examines whether or not the facilities associated with the proposed interconnection conforms to all applicable LORS required for safe and reliable electric power transmission. Staff's analysis evaluates the power plant switchyard, outlet line, termination and downstream facilities identified by the applicant. Additionally, under the CEQA, the Energy Commission must conduct an environmental review of the "whole of the action," which may include facilities not licensed by the Energy Commission (California Code of Regulations, title 14, §15378). Therefore, the Energy Commission must identify the system impacts and necessary new or modified transmission facilities downstream of the proposed interconnection that are required for interconnection and represent the "whole of the action." The

downstream network upgrade mitigation measures that will be required to maintain system reliability for the addition of the power plant, are used to identify the requirement for any general CEQA analysis.

Energy Commission staff relies on the interconnecting authority for the analysis of impacts on the transmission grid as well as the identification and approval of required new or modified facilities downstream from the proposed interconnection that would be required as mitigation measures. The proposed Orange Grove project would interconnect to the SDG&E transmission network and requires analysis by SDG&E and approval of the California ISO.

SDG&E'S ROLE

SDG&E is responsible for ensuring electric system reliability in the SDG&E system for addition of the proposed generating plant. SDG&E will provide the analysis and reports in their System Impact and Facilities studies, and their approval for the facilities and changes required in the SDG&E system for addition of the proposed transmission modifications.

CALIFORNIA ISO'S ROLE

The California ISO is responsible for ensuring electric system reliability for all participating transmission owners and is also responsible for developing the standards necessary to achieve system reliability. The California ISO will review the studies of the SDG&E system to ensure adequacy of the proposed transmission interconnection. The California ISO will determine the reliability impacts of the proposed transmission modifications on the SDG&E transmission system in accordance with all applicable reliability criteria. According to the California ISO Tariffs, the California ISO will determine the "Need" for transmission additions or upgrades downstream from the interconnection point to insure reliability of the transmission grid. The California ISO will, therefore, review the System Impact Study (SIS) performed by SDG&E and/or any third party, provide their analysis, conclusions and recommendations. On satisfactory completion of the SDG&E Facility study and in accordance with the Large Generator Interconnection Procedure (LGIP) in the California ISO Tariff, the California ISO would execute the Large Generator Interconnection Agreement (LGIA) between the California ISO and the project owner. California ISO would then perform an Operational study examining the impacts of the project on the grid based on the expected 2009 COD. The California ISO may also provide written and verbal testimony on their findings at the Energy Commission hearings, if necessary.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

- California Public Utilities Commission (CPUC) General Order 95 (GO-95), "Rules for Overhead Electric Line Construction," formulates uniform requirements for construction of overhead lines. Compliance with this order ensures adequate service and safety to persons engaged in the construction, maintenance and operation or use of overhead electric lines and to the public in general.
- California Public Utilities Commission General Order 128 (GO-128), "Rules for Construction of Underground Electric Supply and Communications Systems,"

formulates uniform requirements and minimum standards to be used for underground supply systems to ensure adequate service and safety to persons engaged in the construction, maintenance and operation or use of underground electric lines and to the public in general.

- The National Electric Safety Code, 1999 provides electrical, mechanical, civil and structural requirements for overhead electric line construction and operation.
- NERC/WECC Planning Standards: The Western Electricity Coordinating Council (WECC) Planning Standards are merged with the North American Electric Reliability Council (NERC) Planning Standards and provide the system performance standards used in assessing the reliability of the interconnected system. These standards require the continuity of service to loads as the first priority and preservation of interconnected operation as a secondary priority. Certain aspects of the NERC/WECC standards are either more stringent or more specific than the NERC standards alone. These standards provide planning for electric systems so as to withstand the more probable forced and maintenance outage system contingencies at projected customer demand and anticipated electricity transfer levels, while continuing to operate reliably within equipment and electric system thermal, voltage and stability limits. These standards include the reliability criteria for system adequacy and security, system modeling data requirements, system protection and control, and system restoration. Analysis of the WECC system is based to a large degree on Section I.A of the standards, “NERC and WECC Planning Standards with Table I and WECC Disturbance-Performance Table” and on Section I.D, “NERC and WECC Standards for Voltage Support and Reactive Power”. These standards require that the results of power flow and stability simulations verify defined performance levels. Performance levels are defined by specifying the allowable variations in thermal loading, voltage and frequency, and loss of load that may occur on systems during various disturbances. Performance levels range from no significant adverse effects inside and outside a system area during a minor disturbance (loss of load or a single transmission element out of service) to a level that seeks to prevent system cascading and the subsequent blackout of islanded areas during a major disturbance (such as loss of multiple 500 kV lines along a common right of way, and/or multiple generators). While controlled loss of generation or load or system separation is permitted in certain circumstances, their uncontrolled loss is not permitted (WECC 2006).
- NERC Reliability Standards for the Bulk Electric Systems of North America provide national policies, standards, principles and guidelines to assure the adequacy and security of the electric transmission system. The NERC Reliability Standards provide for system performance levels under normal and contingency conditions. With regard to power flow and stability simulations, while these Reliability Standards are similar to NERC/WECC Standards, certain aspects of the NERC/WECC Standards are either more stringent or more specific than the NERC Standards for Transmission System Contingency Performance. The NERC Reliability Standards apply not only to interconnected system operation but also to individual service areas (NERC 2006).
- California ISO Planning Standards also provide standards, and guidelines to assure the adequacy, security and reliability in the planning of the California ISO transmission grid facilities. The California ISO Grid Planning Standards incorporate

the NERC/WECC and NERC Reliability Planning Standards. With regard to power flow and stability simulations, these Planning Standards are similar to the NERC/WECC or NERC Reliability Planning Standards for Transmission System Contingency Performance. However, the California ISO Standards also provide some additional requirements that are not found in the WECC/NERC or NERC Standards. The California ISO Standards apply to all participating transmission owners interconnecting to the California ISO controlled grid. They also apply when there are any impacts to the California ISO grid due to facilities interconnecting to adjacent controlled grids not operated by the California ISO (California ISO 2002a).

- California ISO/Federal Energy Regulatory Commission (FERC) Electric Tariff provides guidelines for construction of all transmission additions/upgrades (projects) within the California ISO controlled grid. The California ISO determines the "Need" for the proposed project where it will promote economic efficiency or maintain system reliability. The California ISO also determines the Cost Responsibility of the proposed project and provides an Operational Review of all facilities that are to be connected to the California ISO grid (California ISO 2007a).

PROJECT DESCRIPTION

The OGP would be located in an 8.5-acre site within the existing 202-acre property owned by SDG&E north State Route 76 and Pala Del Norte Road, and east of Interstate 15 in rural north San Diego County. The OGP plant will consist of two natural gas-fired combustion turbine generator (CTG) units (General Electric LM 6000 model) operating in simple cycle mode with a total 96 MW nominal output. Each CTG unit rated 71.2 MVA, 13.8 kV would be connected through a 3,000-ampere segregated bus duct and a 3,000-ampere, 13.8 kV breaker to the low voltage terminal of a dedicated 45/60/75 MVA, 13.8/69 kV generation step-up (GSU) transformer with a specified impedance of 8.00% @45 MVA (OGE2008a, pages 3-2 and 3-3).

SWITCHYARD AND INTERCONNECTION FACILITIES

The new OGP 69 kV switchyard is proposed as a 2,000-ampere single bus arrangement with three 1,200-ampere 69 kV circuit breakers. Two of the breakers would be connected by short overhead conductors to the high voltage terminals of the respective GSU transformer. The remaining breaker would be used for the new 69 kV underground transmission cable connecting to the existing SDG&E Pala 69 kV substation (OGE2008a, pages 3-2 and 3-3).

The new OGP 69 kV switchyard would be interconnected to the Pala substation 69 kV bus by building a new 0.3-mile long 1,750 kcmil aluminum cross-linked polyethylene (XLPE) 69 kV underground cable line . The cable would be installed within PVC conduits in an underground raceway system encased with concrete and be located in a 20-foot wide right- of-way within the existing SDG&E site. The length of the underground cable within the Pala substation boundary would be 150 feet, if the OGP (queue position # 201) interconnects after the higher generation queue project #173 (a 49.9 MW generator) interconnects at the Pala substation. However, the length of the underground cable inside the Pala substation boundary would be 250 feet, if the OGP interconnects before queue project #173 or queue project #173 withdraws from the

queue. The applicant would build, own and operate the OGP 69 kV switchyard.and the 69 kV interconnection underground cable (OGE2008a, pages 3-2 and 3-3).

The interconnection underground cable would be terminated at the 69 kV Pala substation by building a new 69 kV switch bay. If the OGP interconnects before the queue project #173 or queue project #173 withdraws from the queue, then extension of the existing 2,000-ampere Pala substation bus would be necessary. The new switch bay would consist of a 2,000-ampere 69 kV breaker with two 2,000-ampere disconnect switches. SDG&E would build, own and operate the interconnecting facilities within the fence line of the Pala substation including the new 69 kV switch bay and the new 150 or 250-foot portion of the underground cable ((OGE2008a, pages 3-2 and 3-3)).

The configuration of the OGP 69 kV switchyard, the generator underground cable tie line to the existing SDG&E Pala substation and its termination is in accordance with industry standards and good utility practices, and is acceptable to staff.

TRANSMISSION SYSTEM IMPACT ANALYSIS

For the interconnection of a proposed generating unit or transmission facility to the grid, the interconnecting utility and the control area operator are responsible for ensuring grid reliability. For the OGP, SDG&E and California ISO are responsible for ensuring grid reliability. In accordance with the FERC/California ISO/Utility Tariffs, System Impact and Facilities Studies are conducted to determine the preferred and alternate interconnection methods to the grid, the downstream transmission system impacts and the mitigation measures needed to ensure system conformance with performance levels required by the utility reliability criteria, NERC planning standards, WECC reliability criteria, and California ISO reliability criteria. Staff relies on the studies and any review conducted by the responsible agencies to determine the effect of the project on the transmission grid and to identify any necessary downstream facilities or indirect project impacts required to bring the transmission network into compliance with applicable reliability standards (NERC 2006, WECC 2006, California ISO 2002a and 2007a).

The System Impact and Facilities Studies analyze the grid with and without the proposed project under conditions specified in the planning standards and reliability criteria. The standards and criteria define the assumptions used in the study and establish the thresholds by which grid reliability is determined. The studies must analyze the impact of the project for the proposed first year of operation and thus are based on a forecast of loads, generation and transmission. Load forecasts are developed by the interconnected utility, which would be SDG&E in this case. Generation and transmission forecasts are established by an interconnection queue. The studies are focused on thermal overloads, voltage deviations, system stability (excessive oscillations in generators and transmission system, voltage collapse, loss of loads or cascading outages), and short circuit duties.

If the studies show that the interconnection of the project causes the grid to be out of compliance with reliability standards, the study will then identify mitigation alternatives or ways in which the grid could be brought into compliance with reliability standards. If the interconnecting utility determines that the only feasible mitigation includes transmission modifications or additions which require CEQA review as part of the

"whole of the action," the Energy Commission must analyze those modifications or additions according to CEQA requirements.

SCOPE OF SYSTEM IMPACT STUDY AND FACILITIES STUDY

The October 22, 2007 System Impact Study (SIS) was prepared by the California ISO in coordination with SDG&E to evaluate the impact of the proposed OGP plant to the Pala substation 69 kV bus. Based on the estimated COD of May, 2008, the study was conducted with a 2008 summer peak case and a 2008-09 light winter case derived from the WECC full-loop base cases. A future year analysis was also performed using a 2012 summer peak case derived from the annual California ISO Transmission Expansion Plan. The 2008 summer peak base cases were prepared with and without the proposed OGP 99 MW generation output with a 1-in-10 year heat wave SDG&E summer peak load forecast (4,742 MW) and assumed an import level of 2,833 MW. The 2008-09 light winter cases were prepared with an off-peak SDG&E load forecast (38% of the peak load or 1,778 MW) and imports of 848 MW. The 2012 summer peak case was prepared with 1-in-10 year heat wave SDG&E load forecast (4,981 MW) and import of 3,584 MW. Each of the base cases included planned California ISO approved transmission upgrades that would be operational by 2007/2008, and all queue generation higher than the OGP, including queue project #173 interconnected at the Pala 69 kV substation. The 2012 summer peak case also included the expected impacts of the California Solar initiative (60 MW load reduction) and the Demand Response programs (29 MW load reduction). The study included power flow analysis, a short circuit analysis and a transient stability analysis. According to the mutual agreement between the power plant owner, the California ISO and SDG&E, post-transient voltage and reactive power deficiency analyses were waived for the OGP because no negative impacts were expected (TRC2008d).

The May 2, 2008 Facilities Study (FS), prepared by the California ISO in coordination with SDG&E, considered the estimated COD delayed to May, 2009 and conducted additional power flow analyses, re-examined transient stability analysis with revised machine data (TRC2008c). The FS also determined the scope of work and cost estimates considering that the OGP may interconnect to the SDG&E network under the following three possible scenarios:

- After queue project #173.
- Before queue project #173.
- If queue project #173 withdraws from the queue.

The scope of work and cost estimates included the OGP generation tie line and its termination at the Pala substation, and the necessary downstream delivery network upgrades in the SDG&E system, assuming SDG&E would engineer, construct, own and maintain the interconnecting facilities and its termination within the Pala substation and the downstream delivery network upgrades and changes (OGP SIS, FS Tables 8.1, 8.2 & 8.3.).

POWER FLOW STUDY RESULTS AND MITIGATION

The SIS and FS demonstrate that the OGP generation output would not cause any normal (N-0) overload or voltage criteria violations for any of the 2008 or 2012 system conditions studied with all transmission facilities in service. However, under certain

contingency conditions the existing SDG&E transmission facilities were unable to reliably accommodate interconnection of the OGP and downstream delivery network upgrades would be required to maintain reliability. The Power flow study results are tabulated in Tables 6.1 & 6.2 of the SIS (OGE2008d).

The SIS identified the following overloads due to the addition of the proposed OGP under certain contingencies and corresponding mitigation measures:

- Pala-Monserate Tap 69 kV line: New overloads ranging from 178-197% were identified on the line during the 2008 and 2012 system conditions studied, for the single (N-1) contingency of the Lilac-Pala 69 kV line. New overloads ranging from 118-181% were also identified on the line during the 2008 and 2012 system conditions studied, for the Category C (N-2) contingency of the Lilac 69 kV S bus.

  Mitigation: Reconductoring the line with 636 kcmil ACSS (Aluminum conductor steel supported) conductor, replacing the Pala substation getaways with 3,000 kcmil copper conductor and changing relay settings at Pala substation for the line. Staff considers the mitigation acceptable.

- Monserate-Monserate Tap 69 kV line: New overloads ranging from 133-160% were identified on the line during the 2008 and 2012 system conditions studied, due to the single (N-1) contingency of the Lilac-Pala 69 kV line. A new overload of 147% were also identified on the line during the 2008 light winter system conditions for the Category C contingency of the Lilac 69 kV S bus.

  Mitigation: Replacing Monserate substation getaways with 3,000 kcmil copper conductor and reconductoring one span of the line with 636 kcmil ACSS. Staff considers the mitigation acceptable.

- Monserate-Avocado Tap 69 kV line: A new overload of 110% was identified on the line during the 2008 light winter system conditions for the single (N-1) contingency of the Lilac-Pala 69 kV line.

  Mitigation: Changing relay settings at Monserate 69 kV substation for the line. Staff considers the mitigation acceptable.

- Pala-Lilac 69 kV line: New overloads ranging from 171-189% were identified on the line during the 2008 and 2012 system conditions studied, for the single (N-1) contingency of the Avocado-Monserate 69 kV line. New overloads ranging from 171 to 189% were also identified on the line during the 2008 and 2012 system conditions studied, for the double (N-2) contingencies of the Penasquitos-Escondido #1& #2 230 kV lines.

  Mitigation: Replacing the Pala substation getaways with 3,000 kcmil copper conductor and the 69 kV breaker for the line at the Lilac 69 kV substation. Changing relay settings for the line at the Pala and Lilac 69 kV substations. A SDG&E project is scheduled to upgrade the existing 69 kV breaker at the Lilac 69 kV substation for the line in June, 2008. Staff considers the mitigation acceptable.

- Warners- Rincon 69 kV line: A new overload of 110% was identified on the line during the 2012 system summer peak conditions for the single (N-1) contingency of the Creelman-Sycamore 69 kV line.

Mitigation: Installing a Special Protection Scheme (SPS) to trip Warners-Santa Ysabel 69 kV line during the contingency overload of the Warners-Rincon 69 kV line and subsequently curtail OGP generation, if necessary. The SPS will be temporary until the line is reconductored or further evaluated by SDG&E. Staff considers the mitigation acceptable.

- Rincon-Lilac 69 kV line: A new overloads of 106% were identified on the line during the 2012 system summer peak conditions for the single (N-1) contingency of the Felicita-Valley Center 69 kV line.

  Mitigation: Installing a SPS to trip the Warners-Ricon 69 kV line during the contingency overload of the Rincon-Lilac 69 kV line and subsequently curtail OGP generation, if necessary. The SPS will be temporary until the line is reconductored or further evaluated by SDG&E. Staff considers the mitigation acceptable.

The FS determined that the downstream SDG&E network upgrades would remain same as above if the OGP interconnects before or after queue project #173. If the queue 173 withdraws from the queue and the OGP interconnects, then the SDG&E network upgrades as stated above for the overload violations at the Monserate-Avocado Tap and Rincon-Lilac 69 kV lines would not be required for the OGP interconnection (TRC2008c, pages 4-8).

SHORT CIRCUIT STUDY RESULTS

Three line-to-ground and single line-to-ground faults were simulated with and without the OGP to determine if there are any overstressed circuit breakers in the project vicinity caused by the addition of the project. Study results indicate no circuit breaker fault duty violations attributable to the OGP. The study determined that the OGP is not responsible for mitigation of any pre-project overstressed breakers. SDG&E has various planned projects to mitigate the pre-project overstressed breakers. The short circuit analysis results are shown in the Appendix G of the SIS (TRC2008d, Appendix G).

TRANSIENT STABILITY STUDY RESULTS AND MITIGATION

Transient stability analysis is performed to determine whether the transmission system would remain stable with the addition of the OGP. SDG&E performed the analysis for the 2008 summer peak and 2008-09 light winter system conditions with simulated faults under selected critical contingencies. Both the SIS and FS results concluded that the transmission system would remain stable for all contingency simulations studied, but there are frequency and voltage criteria violations. If queue project #173 is interconnected, there are frequency and voltage criteria violations at the 69 kV Pala substation bus in both pre and post-project cases, and frequency criteria violations at the queue project #173-13.8 kV generator bus in the post-project case. For the pre-project frequency criteria violations, queue project #173 is responsible for mitigation. If queue project #173 is not interconnected, there are frequency deviation violations at the OGP 69 kV, OGP 13.8 kV and Pala substation 69kV buses (TRC2008c, page 9).

Mitigation: The FS determined that whether or not queue #173 is interconnected, the OGP must implement a protection scheme in their plant that will utilize its own equipment protection relays for tripping the OGP generators in order to eliminate the

identified frequency and voltage deviation violations in the SDG&E system and for faults at the Pala substation 69 kV bus. Staff concurs with the mitigation (TRC2008c, page 9).

CALIFORNIA ISO REVIEW

In accordance with the provisions of the LGIP as in the California ISO Tariff, the California ISO in coordination with SDG&E performed the October 22, 2007 SIS and the May 2, 2008 FS. The studies evaluated the system impacts of the proposed 96 MW net generation output from the OGP to the SDG&E Pala 69 kV substation (with and without queue project #173) and determined the mitigation measures needed to eliminate the adverse impacts. The FS determined the scope of work and cost estimates for the interconnection and downstream SDG&E delivery network upgrade transmission facilities, which include reconductoring the Pala-Monserate 69 kV line and one span of the Monserate-Monserate Tap 69 kV line. The California ISO suggested that in order to get an exemption from the California Public Utility Commission's (CPUC) GO-131-D permit required by SDG&E and thereby expediting CPUC approval to proceed for construction of the network upgrades, the power plant owner as part of their AFC may provide the full scope of SDG&E network upgrade facilities along with the Environmental Analysis reports according to the CEQA review to the lead agency, in this case the Energy Commission.

In order to expedite the construction schedule with a longer lead time to accommodate the proposed in-service date of April 1, 2009, the California ISO also proposed that the power plant owner has the option to sign an Engineering and Procurement (E&P) Agreement with SDG&E to begin design and procurement phases for the interconnection and network upgrade facilities. Per section 9 of the LGIP, such E &P Agreement may be utilized by the project owner prior to the execution of the LGIA for the OGP between the California ISO and the project owner (TRC2008c, pages 40, 41).

Further the California ISO instead of issuing the final approval letter, would perform an Operational study/Procedure examining the impacts of the OGP generation output on the SDG&E grid based on the expected May 31, 2009 COD.

Performance of the Operational study/Procedure based on 2009 COD and execution of the LGIA would ensure system reliability in the California ISO grid and compliance with WECC/NERC and California ISO Planning standards (WECC 2006, NERC 2006, California ISO 2002a and 2007a).

DOWNSTREAM FACILITIES

Besides the interconnection facilities which include the new OGP 69 kV switchyard and the proposed new 69 kV underground cable tie line between the OGP 69 kV switchyard and the Pala 69 kV substation, accommodating the interconnection of the OGP at the Pala substation 69 kV bus would require installation of a new 69 kV switch bay consisting of a 2,000-ampere breaker with two 2,000-ampere disconnect switches It will be necessary to extend the 69 kV Pala substation bus in case the OGP interconnects before queue project #173 or queue project #173 withdraws from the queue. The construction for the Pala Substation expansion would be done by SDG&E within the existing fence line of the Pala substation.

Further, to maintain reliability in the SDG&E transmission network for the addition of the OGP, it would be necessary to reconductor the Pala-Monserate 69 kV line and one span of the Monserate-Monserate Tap 69 kV line with higher size conductor. SDG&E would be responsible for reconductoring the lines which would occur within the existing SDG&E right-of way between the Monserate and Pala substations with some adjacent temporary laydown and stringing sites. The remaining network upgrades according to the mitigation plan would be done by SDSG&E within the fence line of the SDG&E substations.

CUMULATIVE IMPACTS

Since the OGP as a local generation is being connected to the rural sparse 69 kV subtransmission network with long transmission lines, staff believes that the OGP generation would create some cumulative effects in the area network.

The cumulative marginal impacts due to the OGP, as identified in the SIS and FS, would be mitigated. Staff also believes that there would be some positive impacts because the OGP as a local generation would meet the increasing load demand in the northern San Diego County, provide additional reactive power and voltage support in the local network, enhance reliability and may reduce system losses in the SDG&E local network.

ALTERNATIVE TRANSMISSION ROUTES

The new OGP 69 kV switchyard would be interconnected to the existing SDG&E Pala substation 69 kV bus by building a new 0.3-mile 69 kV underground cable tie line that would follow the shortest and economic route with least infrastructure improvement through a 20-foot right-of-way within the existing SDG&E property. An alternate transmission interconnection to a 230 kV line away from the Pala substation in the area would involve construction of longer overhead lines in a new right-of-way with a new substation with more environmental impacts and higher costs. As such the transmission line or route selected by the applicant being shortest and economic is permissible under the provisions of CEQA (OGE2008a, pages 3-2 and 3-3).

CONFORMANCE WITH LORS AND CEQA REVIEW

The proposed new interconnecting facilities, the OGP 69 kV switchyard, the generator underground cable tie to the existing SDG&E Pala 69 kV substation and its termination, and SDG&E network upgrades and changes would be built according to the NESC standards, and GO-95 and GO-128 Rules. The new facilities and changes would be adequate in accordance with industry standards and good utility practices, and are acceptable to staff according to engineering LORS. The CPV Sentinel project would, therefore, meet the requirements and standards of all applicable LORS and CEQA review upon satisfactory compliance of the Conditions of Certifications (OGE2008a, table 3.3-1).

RESPONSE TO AGENCY AND PUBLIC COMMENTS

No agency or public comments related to the TSE discipline have been received.

CONCLUSIONS AND RECOMMENDATIONS

The proposed new interconnecting facilities, the OGP 69 kV switchyard, the generator underground cable tie line to the existing SDG&E Pala 69 kV substation and its termination, and SDG&E network upgrades and changes would be built according to the NESC standards, and GO-95 and GO-128 Rules. The new facilities and changes would be adequate in accordance with industry standards and good utility practices, and are acceptable to staff according to engineering LORs. The applicant's submission of a California ISO Operational Study report and the execution of LGIA would ensure system reliability in the California ISO grid and conformance with the reliability LORS.

The SIS and FS demonstrate that the addition of the OGP would cause some adverse impacts on the SDG&E system. OGP causes overload violations under certain emergency contingency conditions, and for frequency and voltage deviations during transient system conditions due to faults. The mitigation plan described in the SIS and FS would be adequate to eliminate the adverse impacts and involves installation of SPSs, and downstream network upgrades and changes in the SDG&E system including reconductoring of the Pala-Monserate 69 kV line and one span of the Monserate-Monserate Tap 69 kV line with higher size conductor, and a relay protection scheme in the OGP plant.

The OGP would, therefore, conform to the applicable LORS and CEQA review upon satisfactory compliance of the recommended Conditions of Certifications.

The OGP as a local generation would meet the increasing load demand n the rural northern San Diego County, provide additional reactive power and voltage support in the local network, enhance reliability and may reduce system losses in the SDG&E local network.

RECOMMENDATIONS

If the Energy Commission approves the project, staff recommends the following Conditions of Certification to ensure system reliability and conformance with LORS.

CONDITIONS OF CERTIFICATIONS FOR TSE

TSE-1 The project owner shall furnish to the CPM and to the CBO a schedule of transmission facility design submittals, a Master Drawing List, a Master Specifications List, and a Major Equipment and Structure List. The schedule shall contain a description and list of proposed submittal packages for design, calculations, and specifications for major structures and equipment. To facilitate audits by Energy Commission staff, the project owner shall provide designated packages to the CPM when requested.

Verification: At least 60 days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of construction, the project owner shall

submit the schedule, a Master Drawing List, and a Master Specifications List to the CBO and to the CPM. The schedule shall contain a description and list of proposed submittal packages for design, calculations, and specifications for major structures and equipment (see a list of major equipment in **Table 1 Major Equipment List** below). Additions and deletions shall be made to the table only with CPM and CBO approval. The project owner shall provide schedule updates in the Monthly Compliance Report.

Table 1
Major Equipment List

Breakers
Step-up Transformer
Switchyard
Busses
Surge Arrestors
Disconnects and Wave-traps
Take off facilities
Electrical Control Building
Switchyard Control Building
Transmission Pole/Tower
Insulators and Conductors
Grounding System

TSE-2 Prior to the start of construction the project owner shall assign an electrical engineer and at least one of each of the following to the project: A) a civil engineer; B) a geotechnical engineer or a civil engineer experienced and knowledgeable in the practice of soils engineering; C) a design engineer, who is either a structural engineer or a civil engineer fully competent and proficient in the design of power plant structures and equipment supports; or D) a mechanical engineer. (Business and Professions Code Sections 6704 et seq., require state registration to practice as a civil engineer or structural engineer in California.)

The tasks performed by the civil, mechanical, electrical or design engineers may be divided between two or more engineers, as long as each engineer is responsible for a particular segment of the project (e.g., proposed earthwork, civil structures, power plant structures, equipment support). No segment of the project shall have more than one responsible engineer. The transmission line may be the responsibility of a separate California registered electrical engineer. The civil, geotechnical or civil and design engineer assigned in conformance with Facility Design condition **GEN-5**, may be responsible for design and review of the TSE facilities.

The project owner shall submit to the CBO for review and approval, the names, qualifications and registration numbers of all engineers assigned to the project. If any one of the designated engineers is subsequently reassigned or replaced, the project owner shall submit the name, qualifications and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the

CBO's approval of the new engineer. This engineer shall be authorized to halt earthwork and to require changes if site conditions are unsafe or do not conform with predicted conditions used as a basis for design of earthwork or foundations.

The electrical engineer shall:

1. Be responsible for the electrical design of the power plant switchyard, outlet and termination facilities; and

2. Sign and stamp electrical design drawings, plans, specifications, and calculations.

Verification: At least 30 days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of rough grading, the project owner shall submit to the CBO for review and approval, the names, qualifications and registration numbers of all the responsible engineers assigned to the project. The project owner shall notify the CPM of the CBO's approvals of the engineers within five days of the approval.

If the designated responsible engineer is subsequently reassigned or replaced, the project owner has five days in which to submit the name, qualifications, and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer within five days of the approval.

TSE-3 If any discrepancy in design and/or construction is discovered in any engineering work that has undergone CBO design review and approval, the project owner shall document the discrepancy and recommend corrective action. (1998 CBC, Chapter 1, Section 108.4, Approval Required; Chapter 17, Section 1701.3, Duties and Responsibilities of the Special Inspector; Appendix Chapter 33, Section 3317.7, Notification of Noncompliance). The discrepancy documentation shall become a controlled document and shall be submitted to the CBO for review and approval and shall reference this condition of certification.

Verification: The project owner shall submit a copy of the CBO's approval or disapproval of any corrective action taken to resolve a discrepancy to the CPM within 15 days of receipt. If disapproved, the project owner shall advise the CPM, within five days, the reason for disapproval, and the revised corrective action required to obtain the CBO's approval.

TSE-4 For the power plant switchyard, outlet line and termination, the project owner shall not begin any increment of construction until plans for that increment have been approved by the CBO. These plans, together with design changes and design change notices, shall remain on the site for one year after completion of construction. The project owner shall request that the CBO inspect the installation to ensure compliance with the requirements of applicable LORS. The following activities shall be reported in the Monthly Compliance Report:

A. receipt or delay of major electrical equipment;

B. testing or energization of major electrical equipment; and

C. the number of electrical drawings approved, submitted for approval, and still to be submitted.

Verification: At least 30 days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of each increment of construction, the project owner shall submit to the CBO for review and approval the final design plans, specifications and calculations for equipment and systems of the power plant switchyard, outlet line and termination, including a copy of the signed and stamped statement from the responsible electrical engineer attesting to compliance with the applicable LORS, and send the CPM a copy of the transmittal letter in the next Monthly Compliance Report.

TSE-5 The project owner shall ensure that the design, construction and operation of the proposed transmission facilities will conform to all applicable LORS, including the requirements listed below. The project owner shall submit the required number of copies of the design drawings and calculations to the CBO as determined by the CBO.

A. The power plant switchyard and outlet line shall meet or exceed the electrical, mechanical, civil and structural requirements of CPUC General Order 95 or National Electric Safety Code (NESC), Title 8 of the California Code and Regulations (Title 8), Articles 35, 36 and 37 of the "High Voltage Electric Safety Orders", California ISO standards, National Electric Code (NEC) and related industry standards.

B. Breakers and busses in the power plant switchyard and other switchyards, where applicable, shall be sized to accommodate full output from the project and to comply with a short-circuit analysis.

C. Outlet line crossings and line parallels with transmission and distribution facilities shall be coordinated with the transmission line owner and comply with the owner's standards.

D. The project conductors shall be sized to accommodate the full output from the project.

E. Termination facilities shall comply with applicable SDG&E interconnection standards.

F. The project owner shall provide to the CPM:

A line route drawing after selecting one of the alternate route options for the generator interconnection 69 kV tie line.

The Special Protection System (SPS) sequencing and timing if applicable,

A letter stating that the mitigation measures or projects selected by the transmission owners for each criteria violation are acceptable,

The Operational study report based on 2009 or current Commercial Operation Date (COD) system conditions (including operational mitigation measures) from the California ISO and/or SDG&E.

A copy o\f the executed LGIA signed by the California ISO and the project owner.

Verification: At least 60 days prior to the start of construction of transmission facilities (or a lesser number of days mutually agree to by the project owner and CBO), the project owner shall submit to the CBO for approval:

A. Design drawings, specifications and calculations conforming with CPUC General Order 95 or NESC, Title 8, Articles 35, 36 and 37 of the "High Voltage Electric Safety Orders", NEC, applicable interconnection standards and related industry standards, for the poles/towers, foundations, anchor bolts, conductors, grounding systems and major switchyard equipment.

B. For each element of the transmission facilities identified above, the submittal package to the CBO shall contain the design criteria, a discussion of the calculation method(s), a sample calculation based on "worst case conditions"[1] and a statement signed and sealed by the registered engineer in responsible charge, or other acceptable alternative verification, that the transmission element(s) will conform with CPUC General Order 95 or NESC, Title 8, California Code of Regulations, Articles 35, 36 and 37 of the, "High Voltage Electric Safety Orders", NEC, applicable interconnection standards, and related industry standards.

C. Electrical one-line diagrams signed and sealed by the registered professional electrical engineer in responsible charge, a route map, and an engineering description of equipment and the configurations covered by requirements **TSE-5** a) through f) above.

D. A line route drawing after selecting one of the alternate route options for the generator interconnection 69 kV tie line.

E. The Special Protection Scheme (SPS) sequencing and timing if applicable shall be provided concurrently to the CPM.

F. A letter stating that the mitigation measures or projects selected by the transmission owners for each criteria violation are acceptable.

G. The Operational study report based on 2009 or current COD system conditions (including operational mitigation measures) from the California ISO and/or SDG&E.

H. A copy of the executed LGIA signed by the California ISO and the project owner.

[1] Worst case conditions for the foundations would include for instance, a dead-end or angle pole.

TSE-6 The project owner shall inform the CPM and CBO of any impending changes that may not conform to requirements **TSE-5** a) through f), and have not received CPM and CBO approval, and request approval to implement such changes. A detailed description of the proposed change and complete engineering, environmental, and economic rationale for the change shall accompany the request. Construction involving changed equipment or substation configurations shall not begin without prior written approval of the changes by the CBO and the CPM.

Verification: At least 60 days prior to the construction of transmission facilities, the project owner shall inform the CBO and the CPM of any impending changes that` may not conform to requirements of **TSE-5** and request approval to implement such changes.

TSE-7 The project owner shall provide the following Notice to the California Independent System Operator (California ISO) prior to synchronizing the facility with the California Transmission system:

1. At least one week prior to synchronizing the facility with the grid for testing, provide the California ISO a letter stating the proposed date of synchronization; and

2. At least one business day prior to synchronizing the facility with the grid for testing, provide telephone notification to the California ISO Outage Coordination Department.

Verification: The project owner shall provide copies of the Cal-ISO letter to the CPM when it is sent to the California ISO one week prior to initial synchronization with the grid. The project owner shall contact the California ISO Outage Coordination Department, Monday through Friday, between the hours of 0700 and 1530 at (916) 351-2300 at least one business day prior to synchronizing the facility with the grid for testing. A report of conversation with the California ISO shall be provided electronically to the CPM one day before synchronizing the facility with the California transmission system for the first time.

TSE-8 The project owner shall be responsible for the inspection of the transmission facilities during and after project construction, and any subsequent CPM and CBO approved changes thereto, to ensure conformance with CPUC GO-95 or NESC, Title 8, CCR, Articles 35, 36 and 37 of the, “High Voltage Electric Safety Orders”, applicable interconnection standards, NEC and related industry standards. In case of non-conformance, the project owner shall inform the CPM and CBO in writing, within 10 days of discovering such non-conformance and describe the corrective actions to be taken.

Verification: Within 60 days after first synchronization of the project, the project owner shall transmit to the CPM and CBO:

A. “As built” engineering description(s) and one-line drawings of the electrical portion of the facilities signed and sealed by the registered electrical engineer in responsible charge. A statement attesting to conformance with CPUC GO-95 or NESC, Title 8, California Code of Regulations, Articles 35, 36 and 37 of the, “High Voltage Electric

Safety Orders", and applicable interconnection standards, NEC, related industry standards, and these conditions shall be provided concurrently.

B. An "as built" engineering description of the mechanical, structural, and civil portion of the transmission facilities signed and sealed by the registered engineer in responsible charge or acceptable alternative verification. "As built" drawings of the electrical, mechanical, structural, and civil portion of the transmission facilities shall be maintained at the power plant and made available, if requested, for CPM audit as set forth in the "Compliance Monitoring Plan".

C. A summary of inspections of the completed transmission facilities, and identification of any nonconforming work and corrective actions taken, signed and sealed by the registered engineer in charge.

REFERENCES

California ISO (California Independent System Operator) 1998a. California ISO Tariff Scheduling Protocol posted April 1998, Amendments 1,4,5,6, and 7 incorporated.

California ISO (California Independent System Operator) 1998b. California ISO Dispatch Protocol posted April 1998.

California ISO (California Independent System Operator) 2002a. California ISO Planning Standards, February 7, 2002.

California ISO (California Independent System Operator) 2007a. California ISO, FERC Electric Tariff, First Replacement Vol. No. 1, March 2007.

NERC (North American Electric Reliability Council) 2006. Reliability Standards for the Bulk Electric Systems of North America, May 2, 2006.

OGE2008a – OGE/S. Thome (tn46770) Application for Certification Orange Grove Energy dated 6/19/08. Submited to Dockets 6/19/08.

OGE2008c – OGE/S. Thome (tn46979) Supplement to AFC dated 7/8/08. Submitted to Dockets 7/8/08.

TRC2008c – J. Stenger (tn46884) Interconnection Facilities Impact Study Report dated 5/2/08 previously included inAppendix 3-B. Submitted to Dockets 6/26/08.

TRC2008d– J. Stenger (tn46885) Intercommedtion System Impact Study Report dated 10/22/07 previously included in AFC Appendix 3-A. Submitted to Dockets 6/26/08.

TRC2008f – J. Stenger (tn47854) Data Responses 1-73 dated 8/29/08. Submitted to Dockets 8/29/08.

WECC (Western Electricity Coordinating Council) 2006. NERC/WECC Planning Standards, August 2006.

DEFINITION OF TERMS

ACSR	Aluminum cable steel reinforced.
AAC	All Aluminum conductor.
Ampacity	Current-carrying capacity, expressed in amperes, of a conductor at specified ambient conditions, at which damage to the conductor is nonexistent or deemed acceptable based on economic, safety, and reliability considerations.
Ampere	The unit of current flowing in a conductor.
Kiloampere (kA)	1,000 Amperes
Bundled	Two wires, 18 inches apart.
Bus	Conductors that serve as a common connection for two or more circuits.
Conductor	The part of the transmission line (the wire) that carries the current.
Congestion Management	Congestion management is a scheduling protocol, which provides that dispatched generation and transmission loading (imports) would not violate criteria.
Emergency Overload	See Single Contingency. This is also called an L-1.
Hertz	The unit for System Frequency.
Kcmil or KCM	Thousand circular mil. A unit of the conductor's cross sectional area, when divided by 1,273, the area in square inches is obtained.
Kilovolt (kV)	A unit of potential difference, or voltage, between two conductors of a circuit, or between a conductor and the ground. 1,000 Volts.
Loop	An electrical cul de sac. A transmission configuration that interrupts an existing circuit, diverts it to another connection and returns it back to the interrupted circuit, thus forming a loop or cul de sac.
MVAR or Megavars	Megavolt Ampere-Reactive. One million Volt-Ampere-Reactive. Reactive power is generally associated with the reactive nature of motor loads that must be fed by generation units in the system.
Megavolt ampere (MVA)	A unit of apparent power, equals the product of the line voltage in kilovolts, current in amperes, the square root of 3, and divided by 1000.
Megawatt (MW)	A unit of power equivalent to 1,341 horsepower.
Normal Operation/ Normal Overload	When all customers receive the power they are entitled to without interruption and at steady voltage, and no element of the transmission system is loaded beyond its continuous rating.

N-1 Condition	See Single Contingency.
Outlet	Transmission facilities (circuit, transformer, circuit breaker, etc.) linking generation facilities to the main grid.
Power Flow Analysis	A power flow analysis is a forward looking computer simulation of essentially all generation and transmission system facilities that identifies overloaded circuits, transformers and other equipment and system voltage levels.
Reactive Power	Reactive power is generally associated with the reactive nature of inductive loads like motor loads that must be fed by generation units in the system. An adequate supply of reactive power is required to maintain voltage levels in the system.
Remedial Action Scheme (RAS)	A remedial action scheme is an automatic control provision, which, for instance, would trip a selected generating unit upon a circuit overload.
SSAC	Steel Supported Aluminum Conductor.
SF6	Sulfur hexafluoride is an insulating medium.
Single Contingency	Also known as emergency or N-1 condition, occurs when one major transmission element (circuit, transformer, circuit breaker, etc.) or one generator is out of service.
Solid dielectric cable	Copper or aluminum conductors that are insulated by solid polyethylene type insulation and covered by a metallic shield and outer polyethylene jacket.
SVC	Static VAR Compensator: An equipment made of Capacitors and Reactors with electronic controls for producing and controlling Reactive Power in the Power System.
Switchyard	A power plant switchyard (switchyard) is an integral part of a power plant and is used as an outlet for one or more electric generators.
Thermal rating	See ampacity.
TSE	Transmission System Engineering.
TRV	Transient Recovery Voltage
Tap	A transmission configuration creating an interconnection through a sort single circuit to a small or medium sized load or a generator. The new single circuit line is inserted into an existing circuit by utilizing breakers at existing terminals of the circuit, rather than installing breakers at the interconnection in a new switchyard.
Undercrossing	A transmission configuration where a transmission line crosses below the conductors of another transmission line, generally at 90 degrees.
Underbuild	A transmission or distribution configuration where a transmission or distribution circuit is attached to a transmission tower or pole below (under) the principle transmission line conductors.
VAR	Voltage Ampere Reactive, a measure for Reactive power in the power system.

ALTERNATIVES

Testimony of Suzanne Phinney, D.Env.

SUMMARY OF CONCLUSIONS

In the analysis of the Orange Grove Project, staff examined nine alternative project sites, as well as several alternative generation technologies, including renewable technologies which do not burn fossil fuels. Staff also analyzed linear route alternatives. Lacking a significant environmental impact associated with the proposed project, the alternative sites and generation technologies would not result in an environmentally superior project.

Staff analyzed nine sites in the San Diego Gas & Electric (SDG&E) service territory as potential alternatives. Six of the sites (Borrego Springs, Miramar, GCL South, Margarita, Rainbow, and San Luis Rey) were not suitable. They have insufficient space/generation capacity, land use restrictions, or extensive infrastructure requirements. The other three sites (GCL North, Talega, and Sycamore) offer some advantages and disadvantages, but overall have more impacts than the proposed site.

Alternative generation technologies and cooling systems were evaluated for water savings. Use of GE LM6000PD non-SPRINT gas turbine generators equipped with dry low emission combustors in place of the proposed technology would reduce water consumption, but would also decrease the overall output. More units (with a potentially greater footprint) would be required to produce the 96 MW expected from the proposed Orange Grove Project.

Renewable technologies (solar, wind, geothermal, biomass, tidal, and wave) were examined as possible alternatives to the project. Although viable technologies that can reduce environmental impacts, they would not apply to the site in the San Luis Rey River canyon. The canyon has poor solar and wind resources, and does not provide the extensive flat acreage required for solar facilities. Biomass would be impractical due to small generation capacity and the need to truck biomass fuels from outside the area. There are no adequate geothermal resources, and tidal and wave technologies would not apply to the inland site. Consequently, staff does not believe that these various renewable technologies present feasible alternatives to the proposed project.

Alternative linear routes were considered, but not retained. The proposed transmission, gas pipeline, and water supply routes would be more practical and of less impact to the environment than any alternative alignments. Conservation and demand side management measures – which include programs that increase energy efficiency, reduce electricity use, and shift electricity use away from peak hours of demand – were also considered. While a great variety of federal, state, and local demand side management programs have been adopted, these programs are not sufficient to satisfy future electricity needs. Additionally, staff believes that the “No Project” alternative is not superior to the proposed project. The “No Project” scenario would likely delay development of reliable electrical resources required for the region and could impede the ability to serve peak load demands in the SDG&E service area.

Therefore, staff does not recommended alternative generation technologies or sites over the proposed Orange Grove project.

INTRODUCTION

CALIFORNIA ENVIRONMENTAL QUALITY ACT CRITERIA

Energy Commission siting regulations require the examination of the "feasibility of available site and facility alternatives to the Applicant's proposal which substantially lessen the significant adverse impacts of the proposal on the environment" (Title 20, California Code of Regulations, § 1765).

CEQA Guidelines Section 15126.6 (a) (Title 14, California Code of Regulation) requires an evaluation of "a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project." In addition, the analysis must address the "no project" alternative (Title 14, California Code of Regulation, § 15126.6(e)).

The range of alternatives is governed by the "rule of reason," which requires consideration only of those alternatives necessary to permit informed decision-making and public participation. *CEQA Guidelines* state that an environmental document does not have to consider an alternative of which the effect cannot be reasonably ascertained and of which the implementation is remote and speculative (Title 14, California Code of Regulation, §15126.6 (f) (3)).

PROJECT DESCRIPTION AND SETTING

The Orange Grove Project is a 96 MW simple cycle electric generating plant, designed as a peaking facility. The Project is being put forth by Orange Grove Energy, L.P. (Orange Grove Energy), a limited partnership owned by J Power USA Development Co., L.P. through intermediate entities. The 96 MW plant would generate electricity with two GE LM6000 PC SPRINT CTGs (simple-cycle combustion turbines equipped with SPRINT power boost technology to increase output during warm or hot weather). The two turbines would be limited to a combined total of six starts per day and 6,400 hours of annual operation. The plant is expected to operate 60 days of the year.

The 8.5-acre site is adjacent to State Route 76 (SR 76) (Pala Road), two miles west of Pala in northern San Diego County. The Site is situated within a 202-acre property owned by SDG&E, on a former citrus grove bordered by non-native grassland and coastal sage scrub. The San Luis Rey riverbed is on the opposite side of the highway. Ridges up to 1,700 feet surround the Site to the northeast, north, and west. Three residences are located 0.4 to 0.6 miles on a ridgeline above the site. A 0.3 mile underground electric transmission line would connect to a 69-kV bus at the existing Pala substation (on a contiguous parcel to the south), and a 2.4 mile natural gas pipeline would link to an existing SDG&E transmission main. The project would also include a freshwater and a reclaimed water pickup station at Fallbrook Public Utility District

facilities, where water trucks would be filled for hauling to the site. The one-way driving distance would be 15.6 miles from the reclaimed water station and nine miles from the freshwater station. (OGE2008a, section 1.0)

DETERMINING THE SCOPE OF THE ALTERNATIVES ANALYSIS

To prepare this alternative analysis, staff used the methodology summarized below:

- Describe the basic objectives of the project.
- Identify any potential significant environmental impacts of the project.
- Identify and evaluate alternative locations or sites to determine whether the environmental impacts of the alternatives are the same, better, or worse than the proposed project.
- Identify and evaluate technology alternatives to the project which would mitigate impacts.
- Evaluate the impacts of not constructing the project to determine whether the “no project” alternative is superior to the project as proposed.

BASIC OBJECTIVES OF THE PROJECT

The applicant identified the following five objectives in its AFC discussion of alternatives (OGE2008a, page 5-1):

- Provide environmentally sound, efficient and reliable power generation using commercially available proven technology to respond to the SDG&E request for offers (RFO) for new generating capacity to support reliability in an environmentally responsible and economically feasible manner;
- Use a site location within SDG&E’s service territory that has infrastructure with available capacity and ability to reliably support Project electric transmission, fuel supply, and water needs with minimal impact on existing infrastructure systems or required new construction;
- Use a site that is commercially available, including control for reasonable access and linear facility easements;
- Develop a site that has compatible zoning, compatible adjacent land uses, and is located away from sensitive receptors; and
- Maximize the capacity of the classes of equipment to be used, consistent with good engineering practice.

The Applicant also indicates that construction is expected to start in April 2009 for commercial operation by October of that year.

POTENTIAL SIGNIFICANT ENVIRONMENTAL IMPACTS OF THE PROJECT

Potential issues associated with Orange Grove include traffic (from trucking water to the site) and noise (due to proximity to residential receptors). Staff has concluded that any impacts would be mitigated to levels less than significant by the proposed project.

SITE ALTERNATIVES TO THE PROJECT

Staff considered the following criteria in identifying potential alternative sites:

1. Avoid or substantially lessen one or more of the potential significant effects of the project;

2. Satisfy the following criteria:

   A. Suitable acreage and shape.

   B. Availability of infrastructure. The site should be within a reasonable distance of natural gas and water supplies. Longer infrastructure lengths would increase the potential for environmental impacts.

   C. Location in SDG&E service territory.

   D. Compliance with general plan designation and zoning district.

   E. Availability of the site.

Staff first identified a study region. The region consists of SDG&E's service territory, which covers San Diego County and the southern part of Orange County. Staff then reviewed the six alternative sites identified by the applicant (OGE2008a, page 5-3). Three of those sites – Borrego Springs, Miramar, and Margarita – were offered by SDG&E in the RFO referenced above. The other sites (GCL North, GCL South, and Rainbow) are in the vicinity of the Orange Grove site. Staff also identified three additional sites near SDG&E substations: San Luis Rey, Talega, and Sycamore. Staff visited the alternative sites to investigate their suitability and to ascertain their general availability. **Alternatives Figure 1** identifies the locations of all sites considered as alternative sites to the Orange Grove Project.

SITES INITIALLY IDENTIFIED FOR FURTHER EVALUATION

Six of the nine alternative site locations referred to above were rejected for a variety of reasons. These sites and the reasons for rejection are as follows:

Sites not Meeting Screening Criteria

- **Borrego Springs Alternative Site.** This two-acre site in Borrego Springs, a town surrounded by Anza Borrego State Park, features graded, undeveloped desert land. The site's size would allow the generation of only 15 MW, and therefore would not achieve the requested generating capacity and is eliminated from further consideration.

- **Miramar Alternative Site.** Located at the existing Miramar Energy Facility in the City of San Diego, this site allows a maximum peaking capacity of 49MW. SDG&E filed an application in June 2008 for expedited approval of a peaker at the site. Staff has thus not retained the site for further analysis.
- **GCL South Alternative Site.** This site is a disturbed area with former dairy farms 0.65 miles south-southwest of the Orange Grove project site. It is clearly visible from SR-76 and is in close proximity to the San Luis Rey River's riparian habitat, which supports the federally endangered least Bell's vireo and arroyo toad. Owned by Gregory Canyon Ltd., the land is required for mitigation of the company's Gregory Canyon Landfill. If the power plant were sited here, the landfill would have to find equivalent mitigation elsewhere (Data Response Workshop, 9/11/08). Because of this land restriction, the site is not retained for further analysis.
- **Margarita Alternative Site.** This site in Ladera Ranch (southern Orange County) would not have sufficient generation capacity (TRC2008e). In addition, community opposition to power plant development does not make it a preferred option. In May 2008, Wellhead Power Margarita, LLC withdrew an application for a 46 MW peaker at the site.
- **Rainbow Alternative Site.** This site is in a rugged, remote area of unincorporated Rainbow, southwest of Temecula. Development of the site would require improving narrow, rural roads; constructing a new substation and up to four or more miles of gas pipeline; and securing easements for access and gas line construction from multiple landowners. Plant operations would require continued transport of water. With extensive new construction requirements and feasibility concerns, this site will not undergo further consideration.
- **San Luis Rey Alternative Site.** Staff identified this "site" near the San Luis Rey substation in Oceanside. The substation is surrounded by residential development to the west, south, and east and by a steep drop-off to the north. Vacant land on the southwest corner of the S. El Camino Real and Mesa Drive intersection in close proximity to the substation is bisected by a creek. Due to the lack of suitable space, this site is not retained.

Sites Meeting Screening Criteria

Staff is retaining the following alternative sites:

- **GCL North Alternative Site**. Gregory Canyon Ltd. owns this site on the north side of SR 76. Surrounded by steep ridges, it is almost one mile removed from the nearest residence. The site would affect nine acres: a 6-acre grading footprint plus a 3-acre fire protection fuel modification zone. A new 0.5 to 0.7 mile overhead transmission interconnection would cross SR 76 twice and follow the existing 69 kV transmission route across the hillside to the Pala substation.

  Analysis Given the distance to the nearest residence, noise impacts would be reduced. Only two residences would be able to view the power plant, which is also less visible from the highway than the proposed site. The water trucking distance would be shortened by one mile, and the segment of the gas pipeline that cuts across the hillside would not be required. On the other hand, abandoned buildings currently on the site would need to be demolished and the material removed. Due to

topographic and geologic features, blasting would be needed prior to construction. While the power plant itself is less visible, the longer transmission line interconnection would add to the project's visibility.

- **Talega Alternative Site.** Staff identified this undeveloped "site" south of the Talega Substation. Surrounded by low hills, the substation is situated above the San Mateo Creek canyon. The U.S. Marine Corps Base Camp Pendleton is to the south and the city of San Clemente is to the northwest. Development over the last several years has brought commercial and residential buildings to within 0.25 miles of the substation.

  Analysis: The site could not encroach on San Onofre State Beach Park or Northrop Grumman property, located to the south and northeast, respectively. Transmission is easily accessible. Water and natural gas infrastructure may need to be developed. If trucking of water were required, trucks would likely pass through residential areas. While the nearest residential receptors are approximately 0.25 miles from the substation, a ridge blocks the site from view. The power plant could be visible from the San Mateo Creek canyon below, Interstate 5 to the west, and a campground 0.5 miles to the northwest. Nearby lands of Camp Pendleton contain native grasslands and coastal sage scrub, which support a variety of species including the federally threatened California gnatcatcher (*Polioptila californica*). Surveys of the area surrounding the site would be required to assess any potential significant impacts to biological resources.

- **Sycamore Alternative Site.** Staff also identified this "site" near the Sycamore substation, south of Poway and immediately north of the Marine Corps Air Station Miramar. Undeveloped hills surround the substation, although new subdivisions are under construction to the north. Suitable acreage may be available, but would require significant grading. Further analysis would be required to assess water and gas availability.

  Analysis: Transmission is readily accessible. Residential receptors, however, are within 0.5 miles of the substation, and land development patterns may preclude availability of the site. The site is situated just north of the Marine Corps Air Station (MCAS) Miramar, which serves as an important habitat linkage for a wide variety of wildlife species (MCAS Miramar 2000). Potential adverse impacts on biological resources would need close evaluation.

These alternative sites generate potential impacts of their own and do not offer significant advantages over the proposed Orange Grove site. Furthermore, they do not appear to reduce concerns relating to transportation impacts from water delivery.

CONSERVATION AND DEMAND SIDE MANAGEMENT

One alternative to meeting California's electricity demand with new generation is to reduce the demand for electricity. Such *demand side*[1] measures include programs that increase energy efficiency, reduce electricity use, or shift electricity use away from *peak*[2] hours of demand.

In California there is a considerable array of demand side programs. At the federal level, the Department of Energy adopted national standards for appliance efficiency and building standards to reduce the use of energy in federal buildings and at military bases.

At the state level, the Energy Commission adopted comprehensive energy efficiency standards for most buildings, appliance standards for specific items not subject to federal appliance standards, and has the authority to create and implement load management standards. The Energy Commission also provides grants for energy efficiency development through the Public Interest Energy Research (PIER) program.

The California Public Utilities Commission, along with the Energy Commission, oversees investor-owned utility demand side management programs financed by the utilities and their ratepayers. At the local level, many municipal utilities administer demand side management and energy conservation programs. These include subsidies for the replacement of older appliances through rebates, building weatherization programs, and peak load management programs. In addition, several local governments have adopted building standards which exceed the state standards for building efficiency, or have by ordinance set retrofit energy efficiency requirements for older buildings. New buildings may combine the need for heat and power through a single fuel source or a common source may supply heating and/or heating and cooling to a number of adjacent buildings, increasing overall efficiency.

Even with this great variety of federal, state, and local demand side management programs, the state's electricity use is still increasing as a result of population growth and business expansion. Current demand side programs are not sufficient to satisfy future electricity needs, nor is it likely that even more aggressive demand side programs could accomplish this, given the economic and population growth rates of the last 10 years.

Therefore, although it is likely that federal, state, and local demand side programs will receive even greater emphasis in the future, both new generation and new transmission facilities will be needed in the immediate future and beyond in order to maintain adequate supplies.

[1] Planning, implementation, and evaluation of utility-sponsored programs to influence the amount or timing of customers' energy use

[2] Time of day when demand for electricity is at its highest

RENEWABLE ENERGY ALTERNATIVES

Staff also considered renewable energy sources. Although viable, these technologies do not have the quick start-up and shut-down capabilities for peaking power needs. In addition, they are not suited to the proposed site as follows.

- **Solar.** Solar photovoltaic technology uses semiconductors to directly convert sunlight to electricity. Alternately, solar thermal technology – including parabolic trough, power tower, and Stirling engine – converts the sun's energy to heat for utilization by conventional generator equipment. Land requirements can be extensive; depending on the technology, a 96 MW solar plant could require from 380 acres to 960 acres of flat land – acreage that is not available in the San Luis Rey River canyon. Furthermore, the area has insufficient solar resources (under 6.0 $kWh/m^2/day$) for utility-scale power generation (NREL 2007).
- **Wind.** Wind carries kinetic energy that can be utilized to spin the blades of a wind turbine rotor and an electrical generator, which then feeds alternating current (AC) into the utility grid. Wind turbines currently being manufactured have power ratings ranging from 250 watts to 1.8 MW (AWEA 2004). Land use requirements average 5.4 acres/MW (CEC 2008), although the turbine footprints only involve 5% of the area (AWEA 2004). Environmental impacts include bird and bat collisions and visual pollution. The Orange Grove site is in an area of poor to marginal wind resource potential (EERE 2008), and a utility scale wind farm would not be viable.
- **Geothermal.** Steam or high-temperature water from geothermal reservoirs is harnessed to drive steam turbine/generators. Geothermal plants range in size from under 1 MW to 110 MW, and require 0.2 to 0.5 acre/MW. Geothermal plants provide highly reliable base-load power, with capacity factors from 90- 98%. Plants, however, must be built near geothermal reservoir sites, as steam and hot water cannot be transported long distances without significant thermal energy loss. There are no known geothermal resources in San Diego County (CEC 2005).
- **Biomass.** Electricity is generated by burning organic fuels in a boiler to produce steam, which then turns a turbine. Biomass can also be converted into a fuel gas such as methane and burned. Major biomass fuels include forestry and mill wastes, agricultural field crop and food processing wastes, and construction and urban wood wastes. Biomass facilities do not require an extensive amount of land, but only produce small amounts of electricity (in the range of 3 to 10 MW). Furthermore, there is no large fuel source in the area of the proposed project, and ongoing truck deliveries would be required to supply the plant with the biomass fuel.
- **Tidal and Wave.** Tidal generation of electricity involves building a dam, known as a barrage, across a bay or estuary. Water retained behind a dam at high tide produces a power head sufficient to generate electricity as the tide ebbs and water released from within the dam turns conventional turbines. Wave energy technologies -- which include terminator devices, point absorbers, attenuators, and overtopping devices – extract energy from surface wave motion or subsurface pressure fluctuations (MMS 2007). These tidal and wave technologies, many of which are in the research and development stage, would not apply to the inland site.

GENERATION TECHNOLOGY AND COOLING ALTERNATIVES

The proposed generation technology consists of two GE LM6000 PC combustion turbine generators (CTGs), equipped with SPRay-INTercooled (SPRINT) power boost technology. Inlet air chillers are cooled by an evaporative cooling system.

Staff considered generation and cooling alternatives to reduce environmental impacts, particularly the trucking of 87.3 acre-feet per year (AFY) of water to the site. Water saving substitutions could involve exchanging the GE LM6000 PC SPRINT CTGs with GE LM6000 PD non-SPRINT CTGs, and the evaporative cooling with a dry cooling system. The alternatives include the following:

- **Combustion turbine generator**. To reduce the production of nitrogen oxides, the proposed GE LM6000 PC generators inject water into the combustor (OGE2008a, page 5-20), on the order of 29.5 gallons per minute (average annual rate) of fresh water (Appendix 2-D). Alternately, LM6000 PD generators utilize a dry low emissions combustor, eliminating the need for water injection.
- **SPRINT**. The proposed SPRINT power boost technology increases output during warm or hot ambient conditions (OGE2008a, page 2-9), but consumes fresh water at an average rate of 12.1 gallons per minute (page 2-15 and Appendix 2-D). If the SPRINT technology were not used, water consumption would be reduced. The power output, however, of the LM6000 PD non-SPRINT generators would be 82 MW, compared to 96 MW with LM6000 PC SPRINT generators (OGE2008a, page 5-13).
- **Cooling system.** Use of a dry cooling system in place of the proposed evaporative cooling system (for cooling inlet air chillers) would reduce the net consumption of 24 gallons per minute of reclaimed water (OGE2008a, page 2-16). It would also reduce output by approximately 3.2 net MW (OGE2008a, page 5-29), and increase the project footprint by 1,500 square feet (page 5-30).

The water saving features described above would reduce the overall output, and increase the parasitic load. More units (with a potentially greater footprint) would be required to produce 96 MW.

ALTERNATIVE LINEAR ROUTES

A 0.3 mile underground electric transmission line would connect the plant to a 69-kV bus at the existing Pala substation. Since transmission access would be within SDG&E property boundaries, there no alternatives are identified.

A 2.4 mile natural gas pipeline would link to an existing SDG&E transmission main, located near the intersection of Rice Canyon Road and SR 76. Heading west from the proposed site, the new pipeline route would parallel the transmission interconnection, traverse the hillside southwest of the substation (primarily along existing unpaved roads), and cross SR-76 0.4 miles south of the Pala substation. From there, the pipeline would follow the highway, in previously disturbed areas or in the SR 76 right-of-way.

The Applicant considered – but eliminated due to concerns about construction traffic and CalTrans requirements – an alternative alignment that would follow SR 76 for the

entire pipeline route. Under such an alignment, the pipeline would not cross the hillside just southwest of the Pala Substation, and thus would not directly disturb coastal sage scrub habitat. Any other alternatives, however, would likely traverse more habitat than the proposed route.

The Project would also include a freshwater and a reclaimed water pickup station at Fallbrook Public Utility District facilities, where water trucks would be filled for hauling to the site. The Applicant determined these pickup stations to be the only compatible water supply options (OGE2008a, pg. 5-8). The 15.6-mile route from the reclaimed water station and the 9-mile route from the freshwater station (pg. 2-19) appear the most practical.

THE "NO PROJECT" ALTERNATIVE

The "No Project" alternative under CEQA assumes that the project is not constructed. In the CEQA analysis, the "No Project" alternative is compared to the proposed project and determined to be superior, equivalent, or inferior to it. The *CEQA Guidelines* state that "the purpose of describing and analyzing a No Project Alternative is to allow decision makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project" (Cal. Code Regs., tit. 14 §15126.6(i)). Toward that end, the "No Project" analysis considers "existing conditions" and "what would be reasonably expected to occur in the foreseeable future if the project were not approved…" (§15126.6(e)(2)). *CEQA Guidelines* and Energy Commission regulations require consideration of the "No Project" alternative. The no-action alternative is compared to the effects of constructing the proposed project. In short, the site-specific and direct impacts associated with the power plant would not occur at this site if the project does not go forward.

Selection of the "No Project" alternative would render all concerns about project impact moot. The "No Project" alternative would preclude any construction or operation and, thus, grading of the site or installation of new foundations, piping, or utility connections. Trucking of water to the site would not occur.

If the project were not built, the region would not benefit from the local and efficient source of 96 MW of new generation that this facility would provide. A primary benefit of the Orange Grove project is that it would serve peak load demands in the SDG&E service area. The Orange Grove project would also have ability to compensate for the intermittency of solar and wind plants.

In the absence of the Orange Grove project, however, other power plants could likely be constructed in the project area or in San Diego County to serve the demand that could have been met with the Orange Grove project. New plants constructed in the area would likely have similar air quality effects as those of the proposed Orange Grove. If no new natural gas plants were constructed, SDG&E may have to rely on older power plants. These plants could consume more fuel and emit more air pollutants per kilowatt-hour generated than the Orange Grove project. In the near term, the more likely result is that existing plants, many of which produce higher level of pollutants, could operate more than they do now. The "No Project" alternative does not appear to be environmentally superior to the Orange Grove project.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

No comments pertaining to Alternatives were received.

CONCLUSIONS AND RECOMMENDATION

Staff has analyzed in detail project site, generation technology, and linear route alternatives; renewable energy alternatives; conservation measures; and the "No Project" alternative. The mitigation proposed for the project is adequate to lessen any potentially significant environmental impacts to a less-than-significant level, and staff has determined that the preferable alternative is the proposed project using suggested mitigation. Therefore, no alternative is recommended over the proposed project.

REFERENCES

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U.S. Department of Energy, Energy Efficiency and Renewable Energy (EERE). 2008. "California Wind Resource Map." <http://www.eere.energy.gov/windandhydro/windpoweringamerica/maps_template.asp?stateab=ca>.

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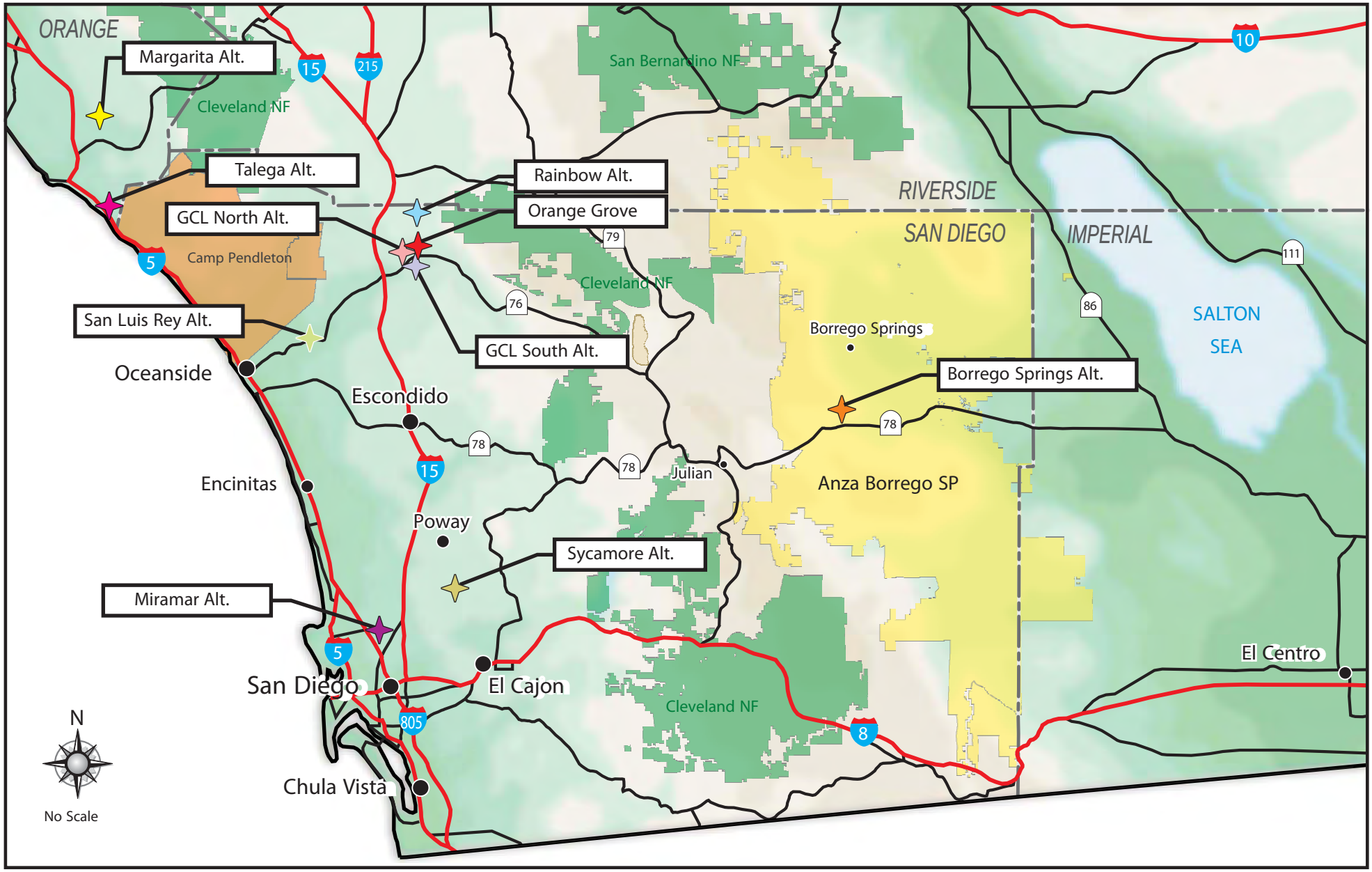

Figure 1

California Energy Commission - Siting, Transmission and Environmental Protection Division

Orange Grove Alternatives

GENERAL CONDITIONS
INCLUDING
COMPLIANCE MONITORING AND CLOSURE PLAN

Testimony of Chris Davis

INTRODUCTION

The project's General Compliance Conditions of Certification, including Compliance Monitoring and Closure Plan (Compliance Plan) have been established as required by Public Resources Code section 25532. The plan provides a means for assuring that the facility is constructed, operated and closed in compliance with public health and safety, environmental and other applicable regulations, guidelines, and conditions adopted or established by the California Energy Commission and specified in the written decision on the Application for Certification or otherwise required by law.

The Compliance Plan is composed of elements that:

- set forth the duties and responsibilities of the Compliance Project Manager (CPM), the project owner, delegate agencies, and others;
- set forth the requirements for handling confidential records and maintaining the compliance record;
- state procedures for settling disputes and making post-certification changes;
- state the requirements for periodic compliance reports and other administrative procedures that are necessary to verify the compliance status for all Energy Commission approved conditions of certification;
- establish requirements for facility closure plans; and
- specify conditions of certification for each technical area containing the measures required to mitigate any and all potential adverse project impacts associated with construction, operation and closure below a level of significance. Each specific condition of certification also includes a verification provision that describes the method of assuring that the condition has been satisfied.

DEFINITIONS

The following terms and definitions are used to establish when Conditions of Certification are implemented.

PRE-CONSTRUCTION SITE MOBILIZATION

Pre-construction site mobilization consists of limited activities at the site to allow for the installation of fencing, construction trailers, construction trailer utilities, and construction trailer parking at the site. Limited ground disturbance, grading, and trenching associated with the above mentioned pre-construction activities is considered part of pre-construction site mobilization. Walking, driving or parking a passenger vehicle, pickup truck and light vehicles is allowable during pre-construction site mobilization.

CONSTRUCTION

Onsite work to install permanent equipment or structures for any facility. This includes the following:

Ground disturbance: Ground disturbance refers to activities that result in the removal of top soil or vegetation at the site beyond site mobilization needs, and for access roads and linear facilities.

Grading, boring, and trenching: Grading, boring, and trenching refers to activities that result in subsurface soil work at the site and for access roads and linear facilities, e.g., alteration of the topographical features such as leveling, removal of hills or high spots, moving of soil from one area to another, and removal of soil.

Not withstanding the definitions of ground disturbance, and grading, boring, and trenching above, construction does **not** include the following:

1. the installation of environmental monitoring equipment;
2. a soil or geological investigation;
3. a topographical survey;
4. any other study or investigation to determine the environmental acceptability or feasibility of the use of the site for any particular facility; and
5. any work to provide access to the site for any of the purposes specified in "Construction" 1, 2, 3, or 4 above.

START OF COMMERCIAL OPERATION

For compliance monitoring purposes, "commercial operation" begins after the completion of start-up and commissioning, when the power plant has reached reliable steady-state production of electricity at the rated capacity. At the start of commercial operation, plant control is usually transferred from the construction manager to the plant operations manager.

COMPLIANCE PROJECT MANAGER RESPONSIBILITIES

The Compliance Project Manager (CPM) shall oversee the compliance monitoring and is responsible for:

1. Ensuring that the design, construction, operation, and closure of the project facilities are in compliance with the terms and conditions of the Energy Commission Decision;
2. Resolving complaints;
3. Processing post-certification changes to the conditions of certification, project description (petition to amend), and ownership or operational control (petition for change of ownership) (See instructions for filing petitions);
4. Documenting and tracking compliance filings; and

5. Ensuring that compliance files are maintained and accessible.

The CPM is the contact person for the Energy Commission and will consult with appropriate responsible agencies, Energy Commission, and staff when handling disputes, complaints, and amendments.

All project compliance submittals are submitted to the CPM for processing. Where a submittal required by a condition of certification requires CPM approval, the approval will involve all appropriate Energy Commission staff and management. All submittals must include searchable electronic versions (pdf or word files).

PRE-CONSTRUCTION AND PRE-OPERATION COMPLIANCE MEETING

The CPM usually schedules pre-construction and pre-operation compliance meetings prior to the projected start-dates of construction, plant operation, or both. The purpose of these meetings is to assemble both the Energy Commission's and project owner's technical staff to review the status of all pre-construction or pre-operation requirements, contained in the Energy Commission's conditions of certification. This is to confirm that all applicable conditions of certification have been met, or if they have not been met, to ensure that the proper action is taken. In addition, these meetings ensure, to the extent possible, that Energy Commission conditions will not delay the construction and operation of the plant due to oversight and to preclude any last minute, unforeseen issues from arising. Pre-construction meetings held during the certification process must be publicly noticed unless they are confined to administrative issues and processes.

ENERGY COMMISSION RECORD

The Energy Commission shall maintain the following documents and information as a public record, in either the Compliance file or Dockets file, for the life of the project (or other period as required):

- All documents demonstrating compliance with any legal requirements relating to the construction and operation of the facility;
- All monthly and annual compliance reports filed by the project owner;
- All complaints of noncompliance filed with the Energy Commission; and
- All petitions for project or condition of certification changes and the resulting staff or Energy Commission action.

PROJECT OWNER RESPONSIBILITIES

The project owner is responsible for ensuring that the compliance conditions of certification and all other conditions of certification that appear in the Commission Decision are satisfied. The compliance conditions regarding post-certification changes specify measures that the project owner must take when requesting changes in the project design, conditions of certification, or ownership. Failure to comply with any of the conditions of certification or the compliance conditions may result in reopening of the case and revocation of Energy Commission certification; an administrative fine; or other action as appropriate. A summary of the Compliance Conditions of Certification is included as **Compliance Table 1** at the conclusion of this section.

COMPLIANCE CONDITIONS OF CERTIFICATION

Unrestricted Access (COMPLIANCE-1)

The CPM, responsible Energy Commission staff, and delegated agencies or consultants shall be guaranteed and granted unrestricted access to the power plant site, related facilities, project-related staff, and the records maintained on-site, for the purpose of conducting audits, surveys, inspections, or general site visits. Although the CPM will normally schedule site visits on dates and times agreeable to the project owner, the CPM reserves the right to make unannounced visits at any time.

Compliance Record (COMPLIANCE-2)

The project owner shall maintain project files on-site or at an alternative site approved by the CPM for the life of the project, unless a lesser period of time is specified by the conditions of certification. The files shall contain copies of all “as-built” drawings, documents submitted as verification for conditions, and other project-related documents.

Energy Commission staff and delegate agencies shall, upon request to the project owner, be given unrestricted access to the files maintained pursuant to this condition.

Compliance Verification Submittals (COMPLIANCE-3)

Each condition of certification is followed by a means of verification. The verification describes the Energy Commission’s procedure(s) to ensure post-certification compliance with adopted conditions. The verification procedures, unlike the conditions, may be modified as necessary by the CPM.

Verification of compliance with the conditions of certification can be accomplished by the following:

1. Monthly and/or annual compliance reports, filed by the project owner or authorized agent, reporting on work done and providing pertinent documentation, as required by the specific conditions of certification;

2. Appropriate letters from delegate agencies verifying compliance;

3. Energy Commission staff audits of project records; and/or

4. Energy Commission staff inspections of work, or other evidence that the requirements are satisfied.

Verification lead times associated with start of construction may require the project owner to file submittals during the certification process, particularly if construction is planned to commence shortly after certification.

A cover letter from the project owner or authorized agent is required for all compliance submittals and correspondence pertaining to compliance matters. **The cover letter subject line shall identify the project by AFC number, the appropriate condition(s) of certification by condition number(s), and a brief description of the subject of the submittal**. The project owner shall also identify those submittals **not** required by a

condition of certification with a statement such as: “This submittal is for information only and is not required by a specific condition of certification.” When submitting supplementary or corrected information, the project owner shall reference the date of the previous submittal and CEC submittal number.

The project owner is responsible for the delivery and content of all verification submittals to the CPM, whether such condition was satisfied by work performed by the project owner or an agent of the project owner.

All hardcopy submittals shall be addressed as follows:

Chris Davis
(Docket No. 08-AFC-4C)
California Energy Commission
1516 Ninth Street (MS-2000)
Sacramento, CA 95814

Those submittals shall be accompanied by a searchable electronic copy, on a CD or by e-mail, as agreed upon by the CPM.

If the project owner desires Energy Commission staff action by a specific date, that request shall be made in the submittal cover letter and shall include a detailed explanation of the effects on the project if that date is not met.

Pre-Construction Matrix and Tasks Prior to Start of Construction (COMPLIANCE-4)

Prior to commencing construction, a compliance matrix addressing only those conditions that must be fulfilled before the start of construction shall be submitted by the project owner to the CPM. This matrix will be included with the project owner’s first compliance submittal or prior to the first pre-construction meeting, whichever comes first. It will be submitted in the same format as the compliance matrix described below.

Construction shall not commence until the pre-construction matrix is submitted, all pre-construction conditions have been complied with, and the CPM has issued a letter to the project owner authorizing construction. Various lead times for submittal of compliance verification documents to the CPM for conditions of certification are established to allow sufficient staff time to review and comment and, if necessary, allow the project owner to revise the submittal in a timely manner. This will ensure that project construction may proceed according to schedule.

Failure to submit compliance documents within the specified lead-time may result in delays in authorization to commence various stages of project development.

If the project owner anticipates commencing project construction as soon as the project is certified, it may be necessary for the project owner to file compliance submittals prior to project certification. Compliance submittals should be completed in advance where the necessary lead time for a required compliance event extends beyond the date anticipated for start of construction. The project owner must understand that the

submittal of compliance documents prior to project certification is at the owner's own risk. Any approval by Energy Commission staff is subject to change, based upon the Commission Decision.

COMPLIANCE REPORTING

There are two different compliance reports that the project owner must submit to assist the CPM in tracking activities and monitoring compliance with the terms and conditions of the Energy Commission Decision. During construction, the project owner or authorized agent will submit Monthly Compliance Reports. During operation, an Annual Compliance Report must be submitted. These reports, and the requirement for an accompanying compliance matrix, are described below. The majority of the conditions of certification require that compliance submittals be submitted to the CPM in the monthly or annual compliance reports.

Compliance Matrix (COMPLIANCE-5)

A compliance matrix shall be submitted by the project owner to the CPM along with each monthly and annual compliance report. The compliance matrix is intended to provide the CPM with the current status of all conditions of certification in a spreadsheet format. The compliance matrix must identify:

1. The technical area;
2. The condition number;
3. A brief description of the verification action or submittal required by the condition;
4. The date the submittal is required (e.g., 60 days prior to construction, after final inspection, etc.);
5. The expected or actual submittal date;
6. The date a submittal or action was approved by the chief building official (cbo), cpm, or delegate agency, if applicable;
7. The compliance status of each condition, e.g., "not started," "in progress" or "completed" (include the date); and
8. If the condition was amended, the date of the amendment.

Satisfied conditions shall be placed at the end of the matrix.

Monthly Compliance Report (COMPLIANCE-6)

The first Monthly Compliance Report is due one month following the Energy Commission business meeting date upon which the project was approved, unless otherwise agreed to by the CPM. The first Monthly Compliance Report shall include the AFC number and an initial list of dates for each of the events identified on the **Key Events List. The Key Events List Form is found at the end of this section.**

During pre-construction and construction of the project, the project owner or authorized agent shall submit an original and an electronic searchable version of the Monthly Compliance Report within 10 working days after the end of each reporting month. Monthly Compliance Reports shall be clearly identified for the month being reported. The reports shall contain, at a minimum:

1. A summary of the current project construction status, a revised/updated schedule if there are significant delays, and an explanation of any significant changes to the schedule;

2. Documents required by specific conditions to be submitted along with the Monthly Compliance Report. Each of these items must be identified in the transmittal letter, as well as the conditions they satisfy and submitted as attachments to the Monthly Compliance Report;

3. An initial, and thereafter updated, compliance matrix showing the status of all conditions of certification (fully satisfied conditions do not need to be included in the matrix after they have been reported as completed);

4. A list of conditions that have been satisfied during the reporting period, and a description or reference to the actions that satisfied the condition;

5. A list of any submittal deadlines that were missed, accompanied by an explanation and an estimate of when the information will be provided;

6. A cumulative listing of any approved changes to conditions of certification;

7. A listing of any filings submitted to, or permits issued by, other governmental agencies during the month;

8. A projection of project compliance activities scheduled during the next two months. The project owner shall notify the CPM as soon as any changes are made to the project construction schedule that would affect compliance with conditions of certification;

9. A listing of the month's additions to the on-site compliance file; and

10. A listing of complaints, notices of violation, official warnings, and citations received during the month, a description of the resolution of the resolved actions, and the status of any unresolved actions.

All sections, exhibits, or addendums shall be separated by tabbed dividers or as acceptable by the CPM.

Annual Compliance Report (COMPLIANCE-7)

After construction is complete, the project owner shall submit Annual Compliance Reports instead of Monthly Compliance Reports. The reports are for each year of commercial operation and are due to the CPM each year at a date agreed to by the CPM. Annual Compliance Reports shall be submitted over the life of the project unless

otherwise specified by the CPM. Each Annual Compliance Report shall include the AFC number, identify the reporting period and shall contain the following:

1. An updated compliance matrix showing the status of all conditions of certification (fully satisfied conditions do not need to be included in the matrix after they have been reported as completed);

2. A summary of the current project operating status and an explanation of any significant changes to facility operations during the year;

3. Documents required by specific conditions to be submitted along with the Annual Compliance Report. Each of these items must be identified in the transmittal letter, with the condition it satisfies, and submitted as attachments to the Annual Compliance Report;

4. A cumulative listing of all post-certification changes approved by the Energy Commission or cleared by the CPM;

5. An explanation for any submittal deadlines that were missed, accompanied by an estimate of when the information will be provided;

6. A listing of filings submitted to, or permits issued by, other governmental agencies during the year;

7. A projection of project compliance activities scheduled during the next year;

8. A listing of the year's additions to the on-site compliance file;

9. An evaluation of the on-site contingency plan for unplanned facility closure, including any suggestions necessary for bringing the plan up to date [see Compliance Conditions for Facility Closure addressed later in this section]; and

10. A listing of complaints, notices of violation, official warnings, and citations received during the year, a description of the resolution of any resolved matters, and the status of any unresolved matters.

Confidential Information (COMPLIANCE-8)

Any information that the project owner deems confidential shall be submitted to the Energy Commission's Dockets Unit with an application for confidentiality pursuant to Title 20, California Code of Regulations, section 2505(a). Any information that is determined to be confidential shall be kept confidential as provided for in Title 20, California Code of Regulations, section 2501 et. seq.

Annual Energy Facility Compliance Fee (COMPLIANCE-9)

Pursuant to the provisions of Section 25806(b) of the Public Resources Code, the project owner is required to pay an annual compliance fee, which is adjusted annually. The amount of the fee for FY2007-2008 was $17,676. The initial payment is due on the date the Energy Commission adopts the final decision. You will be notified of the amount due. All subsequent payments are due by July 1 of each year in which the

facility retains its certification. The payment instrument shall be made payable to the California Energy Commission and mailed to: Accounting Office MS-02, California Energy Commission, 1516 9th St., Sacramento, CA 95814.

Reporting of Complaints, Notices, and Citations (COMPLIANCE-10)

Prior to the start of construction, the project owner must send a letter to property owners living within one mile of the project notifying them of a telephone number to contact project representatives with questions, complaints or concerns. If the telephone is not staffed 24 hours per day, it shall include automatic answering with date and time stamp recording. All recorded complaints shall be responded to within 24 hours. The telephone number shall be posted at the project site and made easily visible to passersby during construction and operation. The telephone number shall be provided to the CPM who will post it on the Energy Commission's web page at:
http://www.energy.ca.gov/sitingcases/power_plants_contacts.html

Any changes to the telephone number shall be submitted immediately to the CPM, who will update the web page.

In addition to the monthly and annual compliance reporting requirements described above, the project owner shall report and provide copies to the CPM of all complaint forms, including noise and lighting complaints, notices of violation, notices of fines, official warnings, and citations, within 10 days of receipt. Complaints shall be logged and numbered. Noise complaints shall be recorded on the form provided in the **NOISE** conditions of certification. All other complaints shall be recorded on the complaint form (Attachment A).

FACILITY CLOSURE

At some point in the future, the project will cease operation and close down. At that time, it will be necessary to ensure that the closure occurs in such a way that public health and safety and the environment are protected from adverse impacts. Although the project setting for this project does not appear, at this time, to present any special or unusual closure problems, it is impossible to foresee what the situation will be in 30 years or more when the project ceases operation. Therefore, provisions must be made that provide the flexibility to deal with the specific situation and project setting that exist at the time of closure. Laws, Ordinances, Regulations and Standards (LORS) pertaining to facility closure are identified in the sections dealing with each technical area. Facility closure will be consistent with LORS in effect at the time of closure.

There are at least three circumstances in which a facility closure can take place: planned closure, unplanned temporary closure and unplanned permanent closure**.**

CLOSURE DEFINITIONS

Planned Closure

A planned closure occurs when the facility is closed in an anticipated, orderly manner, at the end of its useful economic or mechanical life, or due to gradual obsolescence.

Unplanned Temporary Closure

An unplanned temporary closure occurs when the facility is closed suddenly and/or unexpectedly, on a short-term basis, due to unforeseen circumstances such as a natural disaster or an emergency.

Unplanned Permanent Closure

An unplanned permanent closure occurs if the project owner closes the facility suddenly and/or unexpectedly, on a permanent basis. This includes unplanned closure where the owner implements the on-site contingency plan. It can also include unplanned closure where the project owner fails to implement the contingency plan, and the project is essentially abandoned.

COMPLIANCE CONDITIONS FOR FACILITY CLOSURE

Planned Closure (COMPLIANCE-11)

In order to ensure that a planned facility closure does not create adverse impacts, a closure process that provides for careful consideration of available options and applicable laws, ordinances, regulations, standards, and local/regional plans in existence at the time of closure, will be undertaken. To ensure adequate review of a planned project closure, the project owner shall submit a proposed facility closure plan to the Energy Commission for review and approval at least 12 months (or other period of time agreed to by the CPM) prior to commencement of closure activities. The project owner shall file 120 copies (or other number of copies agreed upon by the CPM) of a proposed facility closure plan with the Energy Commission.

The plan shall:

1. identify and discuss any impacts and mitigation to address significant adverse impacts associated with proposed closure activities and to address facilities, equipment, or other project related remnants that will remain at the site;

2. identify a schedule of activities for closure of the power plant site, transmission line corridor, and all other appurtenant facilities constructed as part of the project;

3. identify any facilities or equipment intended to remain on site after closure, the reason, and any future use; and

4. address conformance of the plan with all applicable laws, ordinances, regulations, standards, and local/regional plans in existence at the time of facility closure, and applicable conditions of certification.

Prior to submittal of the proposed facility closure plan, a meeting shall be held between the project owner and the Energy Commission CPM for the purpose of discussing the specific contents of the plan.

In the event that there are significant issues associated with the proposed facility closure plan's approval, or the desires of local officials or interested parties are inconsistent with the plan, the CPM shall hold one or more workshops and/or the Energy Commission may hold public hearings as part of its approval procedure.

As necessary, prior to or during the closure plan process, the project owner shall take appropriate steps to eliminate any immediate threats to public health and safety and the environment, but shall not commence any other closure activities until the Energy Commission approves the facility closure plan.

Unplanned Temporary Closure/On-Site Contingency Plan (COMPLIANCE-12)

In order to ensure that public health and safety and the environment are protected in the event of an unplanned temporary facility closure, it is essential to have an on-site contingency plan in place. The on-site contingency plan will help to ensure that all necessary steps to mitigate public health and safety impacts and environmental impacts are taken in a timely manner.

The project owner shall submit an on-site contingency plan for CPM review and approval. The plan shall be submitted no less than 60 days (or other time agreed to by the CPM) prior to commencement of commercial operation. The approved plan must be in place prior to commercial operation of the facility and shall be kept at the site at all times.

The project owner, in consultation with the CPM, will update the on-site contingency plan as necessary. The CPM may require revisions to the on-site contingency plan over the life of the project. In the annual compliance reports submitted to the Energy Commission, the project owner will review the on-site contingency plan, and recommend changes to bring the plan up to date. Any changes to the plan must be approved by the CPM.

The on-site contingency plan shall provide for taking immediate steps to secure the facility from trespassing or encroachment. In addition, for closures of more than 90 days, unless other arrangements are agreed to by the CPM, the plan shall provide for removal of hazardous materials and hazardous wastes, draining of all chemicals from storage tanks and other equipment, and the safe shutdown of all equipment. (Also see specific conditions of certification for the technical areas of Hazardous Materials Management and Waste Management.)

In addition, consistent with requirements under unplanned permanent closure addressed below, the nature and extent of insurance coverage, and major equipment warranties must also be included in the on-site contingency plan. In addition, the status of the insurance coverage and major equipment warranties must be updated in the annual compliance reports.

In the event of an unplanned temporary closure, the project owner shall notify the CPM, as well as other responsible agencies, by telephone, fax, or e-mail, within 24 hours and shall take all necessary steps to implement the on-site contingency plan. The project owner shall keep the CPM informed of the circumstances and expected duration of the closure.

If the CPM determines that an unplanned temporary closure is likely to be permanent, or for a duration of more than 12 months, a closure plan consistent with the

requirements for a planned closure shall be developed and submitted to the CPM within 90 days of the CPM's determination (or other period of time agreed to by the CPM).

Unplanned Permanent Closure/On-Site Contingency Plan (COMPLIANCE-13)

The on-site contingency plan required for unplanned temporary closure shall also cover unplanned permanent facility closure. All of the requirements specified for unplanned temporary closure shall also apply to unplanned permanent closure.

In addition, the on-site contingency plan shall address how the project owner will ensure that all required closure steps will be successfully undertaken in the event of abandonment.

In the event of an unplanned permanent closure, the project owner shall notify the CPM, as well as other responsible agencies, by telephone, fax, or e-mail, within 24 hours and shall take all necessary steps to implement the on-site contingency plan. The project owner shall keep the CPM informed of the status of all closure activities.

A closure plan, consistent with the requirements for a planned closure, shall be developed and submitted to the CPM within 90 days of the permanent closure or another period of time agreed to by the CPM.

Post Certification Changes to the Energy Commission Decision: Amendments, Ownership Changes, Insignificant Project Changes and Verification Changes (COMPLIANCE-14)

The project owner must petition the Energy Commission pursuant to Title 20, California Code of Regulations, section 1769, in order to modify the project (including linear facilities) design, operation or performance requirements, and to transfer ownership or operational control of the facility. **It is the responsibility of the project owner to contact the CPM to determine if a proposed project change should be considered a project modification pursuant to section 1769.** Implementation of a project modification without first securing Energy Commission, or Energy Commission staff approval, may result in enforcement action that could result in civil penalties in accordance with section 25534 of the Public Resources Code.

A petition is required for **amendments** and for **insignificant project changes** as specified below. Both shall be filed as a "Petition to Amend." Staff will determine if the change is significant or insignificant. For verification changes, a letter from the project owner is sufficient. In all cases, the petition or letter requesting a change should be submitted to the CPM, who will file it with the Energy Commission's Dockets Unit in accordance with Title 20, California Code of Regulations, section 1209.

The criteria that determine which type of approval and the process that applies are explained below. They reflect the provisions of Section 1769 at the time this condition was drafted. If the Commission's rules regarding amendments are amended, the rules in effect at the time an amendment is requested shall apply.

Amendment

The project owner shall petition the Energy Commission, pursuant to Title 20, California Code of Regulations, Section 1769(a), when proposing modifications to the project (including linear facilities) design, operation, or performance requirements. If a proposed modification results in deletion or change of a condition of certification, or makes changes that would cause the project not to comply with any applicable laws, ordinances, regulations or standards, the petition will be processed as a formal amendment to the final decision, which requires public notice and review of the Energy Commission staff analysis, and approval by the full Commission. The petition shall be in the form of a legal brief and fulfill the requirements of Section 1769(a). Upon request, the CPM will provide you with a sample petition to use as a template.

Change of Ownership

Change of ownership or operational control also requires that the project owner file a petition pursuant to section 1769 (b). This process requires public notice and approval by the full Commission. The petition shall be in the form of a legal brief and fulfill the requirements of Section 1769(b). Upon request, the CPM will provide you with a sample petition to use as a template.

Insignificant Project Change

Modifications that do not result in deletions or changes to conditions of certification, and that are compliant with laws, ordinances, regulations and standards may be authorized by the CPM as an insignificant project change pursuant to section 1769(a) (2). This process usually requires minimal time to complete, and it requires a 14-day public review of the Notice of Insignificant Project Change that includes staff's intention to approve the modification unless substantive objections are filed. These requests must also be submitted in the form of a "petition to amend" as described above.

Verification Change

Verification may be modified by the CPM without requesting an amendment to the decision if the change does not conflict with the conditions of certification and provides an effective alternate means of verification.

CBO DELEGATION AND AGENCY COOPERATION

In performing construction and operation monitoring of the project, Energy Commission staff acts as, and has the authority of, the Chief Building Official (CBO). Energy Commission staff may delegate CBO responsibility to either an independent third party contractor or the local building official. Energy Commission staff retains CBO authority when selecting a delegate CBO, including enforcing and interpreting state and local codes, and use of discretion, as necessary, in implementing the various codes and standards.

Energy Commission staff may also seek the cooperation of state, regional and local agencies that have an interest in environmental protection when conducting project monitoring.

ENFORCEMENT

The Energy Commission's legal authority to enforce the terms and conditions of its Decision is specified in Public Resources Code sections 25534 and 25900. The Energy Commission may amend or revoke the certification for any facility, and may impose a civil penalty for any significant failure to comply with the terms or conditions of the Energy Commission Decision. The specific action and amount of any fines the Energy Commission may impose would take into account the specific circumstances of the incident(s). This would include such factors as the previous compliance history, whether the cause of the incident involves willful disregard of LORS, oversight, unforeseeable events, and other factors the Energy Commission may consider.

NONCOMPLIANCE COMPLAINT PROCEDURES

Any person or agency may file a complaint alleging noncompliance with the conditions of certification. Such a complaint will be subject to review by the Energy Commission pursuant to Title 20, California Code of Regulations, section 1237, but in many instances the noncompliance can be resolved by using the informal dispute resolution process. Both the informal and formal complaint procedure, as described in current State law and regulations, are described below. They shall be followed unless superseded by future law or regulations.

The Energy Commission has established a toll free compliance telephone number of **1-800-858-0784** for the public to contact the Energy Commission about power plant construction or operation-related questions, complaints or concerns.

Informal Dispute Resolution Process

The following procedure is designed to informally resolve disputes concerning the interpretation of compliance with the requirements of this compliance plan. The project owner, the Energy Commission, or any other party, including members of the public, may initiate an informal dispute resolution process. Disputes may pertain to actions or decisions made by any party, including the Energy Commission's delegate agents.

This process may precede the more formal complaint and investigation procedure specified in Title 20, California Code of Regulations, section 1237, but is not intended to be a substitute for, or prerequisite to it. This informal procedure may not be used to change the terms and conditions of certification as approved by the Energy Commission, although the agreed upon resolution may result in a project owner, or in some cases the Energy Commission staff, proposing an amendment.

The process encourages all parties involved in a dispute to discuss the matter and to reach an agreement resolving the dispute. If a dispute cannot be resolved, then the matter must be brought before the full Energy Commission for consideration via the complaint and investigation procedure.

Request for Informal Investigation

Any individual, group, or agency may request the Energy Commission to conduct an informal investigation of alleged noncompliance with the Energy Commission's terms and conditions of certification. All requests for informal investigations shall be made to the designated CPM.

Upon receipt of a request for informal investigation, the CPM shall promptly notify the project owner of the allegation by telephone and letter. All known and relevant information of the alleged noncompliance shall be provided to the project owner and to the Energy Commission staff. The CPM will evaluate the request and the information to determine if further investigation is necessary. If the CPM finds that further investigation is necessary, the project owner will be asked to promptly investigate the matter. Within seven working days of the CPM's request, provide a written report to the CPM of the results of the investigation, including corrective measures proposed or undertaken. Depending on the urgency of the noncompliance matter, the CPM may conduct a site visit and/or request the project owner to also provide an initial verbal report, within 48 hours.

Request for Informal Meeting

In the event that either the party requesting an investigation or the Energy Commission staff is not satisfied with the project owner's report, investigation of the event, or corrective measures proposed or undertaken, either party may submit a written request to the CPM for a meeting with the project owner. Such request shall be made within 14 days of the project owner's filing of its written report. Upon receipt of such a request, the CPM shall:

1. immediately schedule a meeting with the requesting party and the project owner, to be held at a mutually convenient time and place;

2. secure the attendance of appropriate Energy Commission staff and staff of any other agencies with expertise in the subject area of concern, as necessary;

3. conduct such meeting in an informal and objective manner so as to encourage the voluntary settlement of the dispute in a fair and equitable manner;

4. After the conclusion of such a meeting, promptly prepare and distribute copies to all in attendance and to the project file, a summary memorandum that fairly and accurately identifies the positions of all parties and any understandings reached. If an agreement has not been reached, the CPM shall inform the complainant of the formal complaint process and requirements provided under Title 20, California Code of Regulations, section 1230 et seq.

Formal Dispute Resolution Procedure-Complaints and Investigations

Any person may file a complaint with the Energy Commission's Dockets Unit alleging noncompliance with a Commission decision adopted pursuant to Public Resources Code section 25500. Requirements for complaint filings and a description of how complaints are processed are in Title 20, California Code of Regulations, section 1237.

KEY EVENTS LIST

PROJECT: _____

DOCKET #: _____

COMPLIANCE PROJECT MANAGER: _____

EVENT DESCRIPTION	DATE
Certification Date	
Obtain Site Control	
Online Date	
POWER PLANT SITE ACTIVITIES	
Start Site Mobilization	
Start Ground Disturbance	
Start Grading	
Start Construction	
Begin Pouring Major Foundation Concrete	
Begin Installation of Major Equipment	
Completion of Installation of Major Equipment	
First Combustion of Gas Turbine	
Obtain Building Occupation Permit	
Start Commercial Operation	
Complete All Construction	
TRANSMISSION LINE ACTIVITIES	
Start T/L Construction	
Synchronization with Grid and Interconnection	
Complete T/L Construction	
FUEL SUPPLY LINE ACTIVITIES	
Start Gas Pipeline Construction and Interconnection	
Complete Gas Pipeline Construction	
WATER SUPPLY LINE ACTIVITIES	
Start Water Supply Line Construction	
Complete Water Supply Line Construction	

Compliance Table 1
Summary of Compliance Conditions of Certification

CONDITION NUMBER	SUBJECT	DESCRIPTION
COMPLIANCE-1	Unrestricted Access	The project owner shall grant Energy Commission staff and delegate agencies or consultants unrestricted access to the power plant site.
COMPLIANCE-2	Compliance Record	The project owner shall maintain project files on-site. Energy Commission staff and delegate agencies shall be given unrestricted access to the files.
COMPLIANCE-3	Compliance Verification Submittals	The project owner is responsible for the delivery and content of all verification submittals to the CPM, whether such condition was satisfied by work performed or the project owner or his agent.
COMPLIANCE-4	Pre-construction Matrix and Tasks Prior to Start of Construction	Construction shall not commence until the all of the following activities/submittals have been completed: ▪ property owners living within one mile of the project have been notified of a telephone number to contact for questions, complaints or concerns, ▪ a pre-construction matrix has been submitted identifying only those conditions that must be fulfilled before the start of construction, ▪ all pre-construction conditions have been complied with, ▪ the CPM has issued a letter to the project owner authorizing construction.
COMPLIANCE-5	Compliance Matrix	The project owner shall submit a compliance matrix (in a spreadsheet format) with each monthly and annual compliance report which includes the status of all compliance conditions of certification.
COMPLIANCE-6	Monthly Compliance Report including a Key Events List	During construction, the project owner shall submit Monthly Compliance Reports (MCRs) which include specific information. The first MCR is due the month following the Energy Commission business meeting date on which the project was approved and shall include an initial list of dates for each of the events identified on the Key Events List.

CONDITION NUMBER	SUBJECT	DESCRIPTION
COMPLIANCE-7	Annual Compliance Reports	After construction ends and throughout the life of the project, the project owner shall submit Annual Compliance Reports instead of Monthly Compliance Reports.
COMPLIANCE-8	Confidential Information	Any information the project owner deems confidential shall be submitted to the Energy Commission's Dockets Unit with a request for confidentiality.
COMPLIANCE-9	Annual fees	Payment of Annual Energy Facility Compliance Fee
COMPLIANCE-10	Reporting of Complaints, Notices and Citations	Within 10 days of receipt, the project owner shall report to the CPM, all notices, complaints, and citations.
COMPLIANCE-11	Planned Facility Closure	The project owner shall submit a closure plan to the CPM at least 12 months prior to commencement of a planned closure.
COMPLIANCE-12	Unplanned Temporary Facility Closure	To ensure that public health and safety and the environment are protected in the event of an unplanned temporary closure, the project owner shall submit an on-site contingency plan no less than 60 days prior to commencement of commercial operation.
COMPLIANCE-13	Unplanned Permanent Facility Closure	To ensure that public health and safety and the environment are protected in the event of an unplanned permanent closure, the project owner shall submit an on-site contingency plan no less than 60 days prior to commencement of commercial operation.
COMPLIANCE-14	Post-certification changes to the Decision	The project owner must petition the Energy Commission to delete or change a condition of certification, modify the project design or operational requirements and/or transfer ownership of operational control of the facility.

ATTACHMENT A

COMPLAINT REPORT/RESOLUTION FORM

PROJECT NAME: AFC Number:
COMPLAINT LOG NUMBER _____ Complainant's name and address: Phone number: _____
Date and time complaint received: Indicate if by telephone or in writing (attach copy if written): Date of first occurrence:
Description of complaint (including dates, frequency, and duration):
Findings of investigation by plant personnel: Indicate if complaint relates to violation of a CEC requirement: Date complainant contacted to discuss findings: _____
Description of corrective measures taken or other complaint resolution: Indicate if complainant agrees with proposed resolution: If not, explain: Other relevant information:
If corrective action necessary, date completed: _____ Date first letter sent to complainant: _____(copy attached) Date final letter sent to complainant: _____(copy attached)
This information is certified to be correct. Plant Manager's Signature: _____ Date:

(Attach additional pages and supporting documentation, as required.)

PREPARATION TEAM

ORANGE GROVE PROJECT
STAFF ASSESSMENT
PREPARATION TEAM

Executive Summary ..... Felicia Miller

Introduction ..... Felicia Miller

Project Description ..... Felicia Miller

Air Quality..... WillIam Walters

Biological Resources.....Susan Sanders

Cultural Resources..... Michael McGuirt, Amanda Blosser and Beverly E. Bastian

Hazardous Materials .....Alvin J. Greenberg, Ph.D. and Rick Tyler

Land Use..... Robert Fiore

Noise and Vibration .....Shahab Khoshmashrab

Public Health .....Alvin J. Greenberg, Ph.D.

Socioeconomics ..... Amanda Stennick

Soil and Water Resources…… Cheryl Closson

Traffic and Transportation .....James Adams

Transmission Line Safety and Nuisance ..... Obed Odoemelam, Ph.D.

Visual Resources ..... David Flores

Waste Management ..... Ellen Townsend-Hough

Worker Safety and Fire Protection .....Alvin J. Greenberg, Ph.D. and Rick Tyler

Facility Design.....Steve Baker

Geology and Paleontology .....Dal Hunter, Ph.D., C.E.G.

Power Plant Efficiency.....Erin Bright

Power Plant Reliability.....Erin Bright

Transmission System Engineering..... Ajoy Guha and Mark Hesters

Alternatives ..... Suzanne Phinney

General Conditions.....Chris Davis

Project Assistant .....April Albright

DECLARATION OF
Felicia Miller

I, Felicia Miller declare as follows:

1. I am presently employed by the California Energy Commission in the Facilities Siting Office of the Energy Facilities Siting Division as a Planner II.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony for the Orange Grove Project based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 10/30/08 Signed: Felicia M. Miller

At: Sacramento, California

Felicia Miller

California Energy Commission
1516 Ninth Street, MS-15
Sacramento, California 95814
(916) 654-4640

Professional Experience

April 2007 to present ***California Energy Commission – Planner II - Siting Project Manager***
Plan, organize, direct and manage the State regulatory process for electric generating plants from application through issuance of permit. Plan, organize and direct the efforts of 23 disciplinary environmental and engineering staff in actions related to the California Environmental Quality Act (CEQA) requirements. Recommend actions, policies and procedures affecting the project and commission program direction. Conduct public workshops and hearings related to proposed projects. I Compile, edit, and issue staff environmental assessments and other CEQA related documents.

2006-2007 ***California State Parks***
Associate Parks & Recreation Specialist – Off Highway Vehicle Division/Prairie City Off-Highway Vehicle Park
Development of resources study to determine watershed and hydrology, soil taxonomy and geology of State park. Lead on assessment and recommendations for watershed remediation and sediment control project. Climate prediction study to determine weather and hydrology patterns of park over a 25-year period. Research analysis for master and general plan update for district off highway vehicle parks.

2005-2006 ***California State Department of Mental Health***
Senior Mental Health Specialist – Program Compliance
Program lead in Fingerprinting Analysis/Criminal Background Checks and Investigations Unit. Coordinated and directed assignments and deadlines for staff. Project lead in development of 2 new database programs used to automate data from fingerprint program and facility investigations. Unit coordinator for compilation, coordination and analysis of sections monthly measures and outcomes report, contributed significantly in eliminating CBC unit backlog. Conducted incident investigations to determine regulatory compliance.

2000-2005 ***California State Parks***
Associate Parks & Recreation Specialist – Grants and Local Services
Administration of park and recreation grants under State and Federal funding to local agencies in over 19 counties statewide and Bureau of Land Management. Provided technical assistance and interpretation of regulations and policy to local agencies, evaluate project status, billing support and documentation, and field inspections to determine compliance with project agreement. Team leader in development of program procedural guides including research of state and federal regulations,

assignments coordination and participation at public hearings and coordinated assignments to meet critical deadlines. Development of program regulations and procedural guide, workshop lead.

1998-2009 ***California State Parks***
Personnel Services Specialist – Human Resources
Personnel and salary transaction functions for a roster of +400 district and HQ employees. Personnel contact with DPR employees for the purpose of responding to questions and dispensing accurate information to HQ and field timekeepers and employees. Contact with outside agencies for purpose of salary and payroll interpretation and processing. Translated bargaining unit contractual information to managers and employees and translated reference guidelines for laws and rules as set forth by DPA, SCO and SPB. Developed and initiated HQ new employee orientation and improved sign up procedures.

1997-1998 ***Department of the Youth Authority***
Public Service and Support Division
Analyzed and reconciled monthly reported from facilities and prepared monthly reimbursement claims to exceed $650K. Compiled data, analyzed and prepared intricate spreadsheets for monthly, quarterly and yearly accounting. Responsible for Mac training and support for division. Chair for United Way campaign.

1994-1997 ***Department of Fish and Game***
Office of Oil Spill Response-Scientific Division
Coordinated and prioritized assignments for division and supervised work of support staff. Coordination of interagency efforts as agency liaison during emergency response efforts during a coastline oil spill. Developed Operations Protocol manual for Incident Command Center and emergency response support team. Facilitated public surveys to determine economic value of recreation and natural resources and determine user trends.

1991-1994 ***John F. Kennedy High School***
Office of Oil Spill Response-Scientific Division
Using district graduation and special education requirements; planned, collected, evaluated and analyzed data from a variety of sources to develop a master schedule for educational programs; critical analysis of all phases of student programs to determine eligibility of curriculum prerequisites and high school graduation eligibility; translated high school graduation requirements and policy from district and inter-district transcripts to make curriculum recommendations, conducted curriculum training program to incoming students and parents, supervised team of student assistants. Program lead for targeted youth.

Education/Credentials

- Bachelor of Arts, Cum Laude, Sacramento State University in Communication Studies, concentration in Rhetorical Criticism
- California Real Estate Sales License, September 1999, license current

DECLARATION OF

Testimony of William Walters, P.E.

I, **William Walters,** declare as follows:

1. I am presently employed by Aspen Environmental Group, a contractor to the California Energy Commission, Systems Assessment and Facilities Siting Division, as a senior associate in engineering and physical sciences.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Air Quality** for the **Orange Grove Project** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: November 3, 2008 Signed: _____

At: Agoura Hills, California

WILLIAM WALTERS, P.E.
Air Quality Specialist

ACADEMIC BACKGROUND
B.S., Chemical Engineering, 1985, Cornell University

PROFESSIONAL EXPERIENCE

Mr. Walters has over 20 years of technical and project management experience in environmental compliance work, including environmental impact reports, emissions inventories, source permitting, energy and pollution control research RCRA/CERCLA site assessment and closure, site inspection, and source monitoring,.

Aspen Environmental Group — 2000 to present

Responsible as lead technical and/or project manager of environmental projects. Specific responsibilities and projects include the following:

- **Engineering and Environmental Technical Assistance to Conduct Application for Certification Review for the California Energy Commission:**
  - Preparation and project management of the air quality section of the Staff Assessment and/or Initial Study and the visual plume assessment for the following California Energy Commission (CEC) licensing projects: Hanford Energy Park; United Golden Gate, Phase I; Huntington Beach Modernization Project (including Expert Witness Testimony); Woodland Generating Station 2; Ocotillo Energy Project, Phase I; Magnolia Power Project; Colusa Power Project; Inland Empire Energy Center; Rio Linda/Elverta Power Plant Project; Roseville Energy Center; Henrietta Peaker Project; Tracy Peaking Power Plant Project (including Expert Witness Testimony); Avenal Energy Project; San Joaquin Valley Energy Center (including expert witness testimony); Salton Sea Unit 6 Project (including expert witness testimony); Modesto Irrigation District Electric Generation Station (including expert witness testimony); Walnut Energy Center (including expert witness testimony); Riverside Energy Resource Center (including expert witness testimony); Pastoria Energy Facility Expansion; Panoche Energy Center; Starwood Power Plant; and Riverside Energy Resource Center Units 3 and 4 Project (in progress).
  - Preparation and project management of the visual plume assessment for the following California Energy Commission (Energy Commission) licensing projects: Metcalf Energy Center Power Project (including Expert Witness Testimony); Contra Costa Power Plant Project (including Expert Witness Testimony); Mountainview Power Project; Potrero Power Plant Project; El Segundo Modernization Project; Morro Bay Power Plant Project; Valero Cogeneration Project; East Altamont Energy Center (including expert witness testimony); Russell City Energy Center; SMUD Cosumnes Power Plant Project (including expert witness testimony); Pico Power Project; Blythe Energy Project Phase II; City of Vernon Malburg Generating Station; San Francisco Electric Reliability Project; Los Esteros Critical Energy Facility Phase II; Roseville Energy Park; City of Vernon Power Plant; South Bay Replacement Project; Walnut Creek Energy Park; Sun Valley Energy Project; Highgrove Power Plant; Colusa Generating Station; Russell City Energy Center; Avenal Energy Project; Carlsbad Energy Center; Community Power Project; Panoche Energy Center; San Gabriel Generating Station; Sentinel Energy Project; and Victorville 2 Hybrid Power Project.
  - Assistance in the aircraft safety review of thermal plume turbulence for the Riverside Energy Resources Center; Russell City Energy Center Amendment (including expert witness testimony); Eastshore Energy Power Plant (including expert witness testimony); Carlsbad Energy Center (in progress), Riverside Energy Resource Center Units 3 and 4 Project; Victorville 2 Hybrid Power Project; and the Blythe Energy Power

Plant and Blythe Energy Project Phase II (including expert witness testimony) siting cases. Assistance in the aircraft safety review of thermal and visual plumes of the operating Blythe Energy Power Plant. Preparation of a white paper on methods for the determination of vertical plume velocity determination for aircraft safety analyses.

- Preparation and instruction of a visual water vapor plume modeling methodology class for the CEC.
- Preparation and project management of the public health section of the Initial Study for the Woodland Generating Station 2 Energy Commission licensing project.
- Preparation of project amendment or project compliance assessments, for air quality or visual plume impacts, for several licensed power plants, including: Metcalf Energy Center; Pastoria Power Plant; Elk Hills Power Plant; Henrietta Peaker Project; Tracy Peaker Project; Magnolia Power Project; Delta Energy Center; SMUD Cosumnes Power Plant; Walnut Energy Center; San Joaquin Valley Energy Center; City of Vernon Malburg Generating Station; Otay Mesa Power Plant; Los Esteros Critical Energy Facility; Pico Power Project; Riverside Energy Resource Center; Blythe Energy Project Phase II; Inland Empire Energy Center; Salton Sea Unit 6 Project; and Starwood Power-Midway Peaking Power Plant.
- Preparation of the air quality section of the staff paper "A Preliminary Environmental Profile of California's Imported Electricity" for the Energy Commission and presentation of the findings before the Commission.
- Preparation of the draft staff paper "Natural Gas Quality: Power Turbine Performance During Heat Content Surge", and presentation of the preliminary findings at the California Air Resources Board Compressed Natural Gas Workshop and a SoCalGas Technical Advisory Committee meeting.
- Preparation of the staff paper "Emission Offsets Availability Issues" and preparation and presentation of the Emission Offsets Constraints Workshop Summary paper for the Energy Commission.
- Preparation of information request and data analysis to update the Energy Commission's Cost of Generation Model capital and operating cost factors for combined and simple cycle gas turbine projects. Additionally, performed a review of the presentation for the revised model as part of the CEC's 2007 Integrated Energy Policy Report workshops, and attended the workshop and answering Commissioner questions on the data collection and data analysis.

- For the **Los Angeles Department of Water and Power (LADWP)**:
  - Preparation of the Air Quality Inventory for the LADWP River Supply Pipeline Project EIR.
  - Project management and preparation of the Air Quality Section for the LADWP Valley Generating Station Stack Removal IS/MND support project.
- For the **U.S. Army Corps of Engineers (Corps)**:
  - Preparation of the Air Quality Section and General Conformity Analysis for the Matilija Dam Ecosystem Restoration Project EIS/R for the Corps.
  - Preparation of emission inventory and General Conformity Analysis of the Murrieta Creek Flood Control Project and the Joint Red Flag exercise to be conducted in the Nevada Test and Training Range.
  - Emission inventory for the construction activities forecast for the San Jose/Old San Jose Creeks Ecosystem Restoration project for the Corps.

- Other Projects:
  - Preparation of the Air Quality Section of the LAUSD New School Construction Program EIR and provided traffic trip and VMT calculation support for the Traffic and Transportation Section.

- Preparation of the draft staff paper "Natural Gas Quality: Power Turbine Performance During Heat Content Surge", and presentation of the preliminary findings at the California Air Resources Board Compressed Natural Gas Workshop and a SoCalGas Technical Advisory Committee meeting.
- Preparation of the Air Quality Section of the Environmental Information Document in support of the Coastal Consistency Determinations for the suspension of operation requests for undeveloped units and leases off the Central California Coast.
- Preparation of comments on the Air Quality, Alternatives, Marine Traffic, Public Safety, and Noise section of the Cabrillo Port Liquefied Natural Gas Deepwater Port Draft EIS/EIR for the City of Oxnard.
- Preparation of the emission estimates used in the Air Quality Sections for the DWR Tehachapi Second Afterbay Project Initial Study and EIR.

Camp Dresser & McKee, Inc. 1998 to 2000

Mr. Walters was responsible as lead technical and/or project manager of environmental projects. Specific responsibilities and projects include the following:

- Preparation of emission inventories and dispersion modeling for criteria and air toxic pollutants for the Los Angeles International Airport Master Plan (LAXMP) EIS/EIR.
- Project Manager/Technical lead for the completion of air permit applications and air compliance audits for two Desa International fireplace accessory manufacturing facilities located in Santa Ana, California.
- Project manager/technical lead for the completion of Risk Management Plans (RMPs) for four J.R. Simplot food processing facilities in Oregon, Idaho, and Washington and the Consolidated Reprographics facility located in Irvine, California.

Planning Consultants Research 1997 to 1998

Mr. Walters was responsible as lead technical and/or project manager of environmental projects. Specific responsibilities and projects include the following:

- Project Manager for a stationary source emission audit of the entire Los Angeles International Airport complex for Los Angeles World Airports (LAWA) in support of the LAXMP.
- Review of the Emission Dispersion Modeling System (EDMS) and preparation of a report with findings to the Federal Aviation Administration for LAWA in support of the LAXMP.
- Project manager for the ambient air monitoring and deposition monitoring studies performed for LAWA in support of the LAXMP, including the selection of the monitoring sites and specialty subcontractor, and review of all monitoring data.

Aspen Environmental Group/Clean Air Solutions 1995 to 1996

Mr. Walters was responsible as lead technical and/or project manager of environmental projects. Specific responsibilities and projects include the following:

- Manager of the Portland, Oregon, office of Clean Air Solutions from March 1995 to December 1995, with responsibilities including Project Management, Business Development, and Administration.
- Control technology assessment, engineering support and Notice of Intent to construct preparation for J.R. Simplot's Hermiston, Oregon, food processing facility. Review and revision of an Air Contaminant Discharge Permit application, Title V permit application, and PSD modeling analysis for J.R. Simplot's Hermiston facility.

- Air quality compliance report including an air emission inventory, regulation and permit compliance determination, and recommendations for compliance for Lumber Tech, Inc.'s Lebanon, Oregon, wood products facility.

Fluor Daniel, Inc. **1990 to 1995 and 1996 to 1997**

Mr. Walters was responsible as lead technical or project manager for major environmental projects for both government and private clients. His projects included:

- Prepared several air permit applications for the ARCO Los Angeles Refinery Polypropylene Plant Project; Phase I environmental assessments for properties located in Southern California; and a site investigation and RCRA closure plan for a hazardous waste storage site in Vernon, California.
- Project manager of the Anaconda Smelter site for the U.S. Environmental Protection Agency's (EPA) Alternative Remedial Contract System (ARCS) project during the conclusion of technical activities and project closeout. Prepared a cost recovery report for the project.
- Performed environmental analysis for the Bonneville Power Authority, including air pollution BACT analysis, wastewater analysis, and evaluation of secondary environmental effects of electric power producing technologies.

Jacobs Engineering Group **1988 to 1990**

Mr. Walters was responsible for a wide range of air pollution regulatory and testing projects, including the following:

- Project manager of air toxic emission inventory reports prepared for U.S. Borax's boron mining and refining facility and the Naval Aviation Depot (N. Island Naval Base, San Diego, California).
- Prepared air permit applications and regulatory correspondence for several facilities including the U.S. Department of Energy's Feed Material Production Center uranium processing facility in Fernald, Ohio; Evaluation of a sludge dewatering process at Unocal's Wilmington, California, Refinery; and United Airlines blade repair facility at the San Francisco Airport.
- Characterized and quantified air emissions for offshore oil and gas development activities associated with Federal oil and gas Lease Sale 95, offshore southern California, for the U.S. Minerals Management Service.

CERTIFICATIONS

- Chemical Engineer, California License 5973
- CARB, Fundamentals of Enforcement Seminar
- EPA Methods 1-8, 17; Training Seminar

AWARDS

- California Energy Commission Outstanding Performance Award 2001

DECLARATION OF
Susan D. Sanders

I, **Susan D. Sanders,** declare as follows:

1. I am presently under contract with Aspen Environmental Group to provide environmental technical assistance to the California Energy Commission. Under Contract No. 700-05-002, I am serving as a Biological Resource Specialist and Project Manager to provide Peak Workload Support for the Energy Facility Siting Program and for the Energy Planning Program.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on **Biological Resources** for the **Orange Grove Project** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: October 31, 2008 Signed: Susan D Sanders

At: Nevada City, California

Susan D. Sanders

PAR ENVIRONMENTAL SERVICES, INC.
Principal Biologist

EDUCATION

Ph.D Zoology University of California, Davis (1983)

M.A. Zoology University of California, Davis (1979)
B.A. Zoology University of California, Berkeley (1976)

REGULATORY COMPLIANCE EXPERTISE in coordination with state, federal, and local agencies in the environmental review process for projects regulated by the California Environmental Quality Act, National Environmental Policy Act, Federal and State Endangered Species Acts, National Fish & Wildlife Coordination Act, Clean Water Act, and California Coastal Act.

TECHNICAL EXPERTISE in surveys for threatened and endangered wildlife species; biological inventories; habitat management plans; raptor surveys; wildlife habitat assessment; mitigation monitoring; expert testimony, constraints analysis; sensitive species research. Prepared Biological Assessments for endangered, threatened, and candidate species, and conducted field surveys and literature reviews for willow flycatchers, tricolored blackbirds, Swainson's hawks, giant garter snakes, red-legged frogs, burrowing owls, California spotted owls, San Joaquin kit fox, bald eagles, valley elderberry longhorn beetles, vernal pool crustaceans, and many other special-status species.

PROJECT MANAGEMENT EXPERIENCE on large and complex projects, including a two-year survey of 11,000 acres in the Plumas National Forest for a proposed land exchange, involving supervision of eight technical specialists and subconsultants. Responsible for overseeing numerous transportation and revegetation projects and mitigation monitoring programs which involved budget, personnel, and subconsultant management, agency and client coordination, and preparation of technical reports.

CALIFORNIA ENERGY COMMISSION TECHNICAL ASSISTANCE PAR is currently assisting Aspen and the CEC in evaluating the environmental aspects of new power plant applications throughout the state, and also providing technical expertise as an avian specialist. Dr. Sanders is currently involved in the following projects:

- **Pastoria Energy Facility Expansion**. Working with CEC staff, Dr. Sanders met reviewed the Application for Certification and associated reference material, prepared Data Adequacy Form and Data Request and a Preliminary Staff Assessment.
- **San Francisco Energy Reliability Project**: For this project Dr. Sanders reviewed the Application for Certification and related information material, met with CEC staff and United States Fish and Wildlife Service regarding endangered species issues, and prepared a Preliminary Staff Assessment.
- **Black Mountain Wind Energy and 69kV Transmission Line Project**: Acting as CEC's avian specialist, Dr. Sanders reviewed the extensive literature of effects of wind development

on avian populations, met with the Public Interest Energy Research staff, and prepared a comment letter on behalf of CEC for the Notice of Preparation for this project.

CONSULTING EXPERIENCE (1982 - 2005)

Riparian/Wetland Projects. Designed and conducted studies of wildlife use of riparian/wetlands and potential impacts of reduced flows and other proposed stream modifications; provided expert testimony. Representative projects include:

- New York Creek Flat Habitat Assessment, Yuba County, Soper-Wheeler Company (PAR)
- Friends of the American River v. EBMUD, Lower American River, Sacramento County (County of Sacramento);
- Teichert/Granite Aggregate Mining Site, Sacramento County (Holliman, Hackard, & Taylor);
- Lower Laguna Drainage Master Plan, Sacramento County (PAR);
- Natomas Ditch Abandonment and Pipeline Construction Project, Sacramento County (PAR);
- Tuolumne River Wildlife Studies for FERC License, Tuolumne County (Holton & Associates);
- Turner Creek Hydroelectric Project, Plumas County (Jones & Stokes Associates);
- Calabazas Creek Flood Control Project, Santa Clara County (Santa Clara Valley Water District).

Mitigation Monitoring. Supervised the design and ongoing monitoring of wetland and sensitive species mitigation projects, including riparian revegetation, vernal pool creation, and mitigation banking. Some projects involved preparation of a Habitat Mitigation and Monitoring Plan, and long-term monitoring efforts (five years plus), as well as preparation of annual reports, and coordination with US Army Corps of Engineers, US Fish and Wildlife Service, California Department of Fish and Game, California Department of Transportation, and the US Environmental Protection Agency. Projects include:

- Dark Horse Mitigation Monitoring, Nevada County (Nevada City Engineering)
- Northpointe, Burrowing Owl Mitigation Monitoring, Sacramento County (PAR)
- Burrowing Owl Mitigation Monitoring, Meadowview, Sacramento County (PAR)
- Wilbur Avenue Overhead Project, Habitat Restoration for Lange's Metalmark Butterfly, Antioch, Contra Costa County, (PAR)
- Swainson's Hawk Nest Monitoring, Garden Highway, Sacramento, Sacramento County (PAR)
- Sierra College Boulevard Riparian Revegetation Monitoring, Roseville, Placer County (PAR);
- Roseville Sanitary Landfill Riparian Revegetation Project, Roseville, Placer County (PAR);
- State Route 99/Calvine Interchange Vernal Pool Vegetation and Fairy Shrimp Mitigation Monitoring, Sacramento County (PAR);
- Potrero Hills Landfill Bird Deterrence Monitoring, Solano County (Global Environmental);
- B&J Sanitary Landfill Bird Deterrence Monitoring, Solano County (Global Environmental);
- State Route 50/Folsom Boulevard Improvement Project, Beach Lakes Mitigation Bank (PAR);
- Niblick Bridge Riparian Revegetation and Mitigation Monitoring, San Luis Obispo County (PAR).

CEQA/NEPA Documents. Prepared biological resource sections of Environmental Impact Reports/Statements, Initial Studies, and Environmental Assessments for numerous commercial and residential developments, redevelopment projects, transportation projects, dams, and other water projects throughout northern California. Conducted wildlife and plant community surveys, habitat assessments, agency contacts, data analysis and report preparation. Secured 1602 Streambed Alteration Agreements from California Department of Fish and Game, Section 404 Permits from U.S. Army Corps of Engineers, and 401 Permits from Regional Water Quality Control Board. Some representative projects include:

- Folsom Corporation Yard Redevelopment Plan Project, Sacramento County (PAR Environmental Services, Inc. [PAR]);
- Laguna Creek Interceptor and Sewer Alignment Constraints Study, Sacramento County (PAR);
- Marin Public Safety and Emergency Radio System Project, Marin County (Cord Communication)
- Biological Studies for Endangered Species Compliance, Isabella Dam, Kern County (PAR);
- Granite Quarry, Placerville (The Bedrock Group);
- Pacific-Bell Rocklin Central Dialing Station, Rocklin, Placer County (PAR);
- Whitney Oaks Raptor Surveys, Placer County (Live Oak Enterprises/Pulte Homes);
- Croftwood Project Access Roads, Placer County (Planning Center);
- Auburn Ranch Subdivision Project, Placer County (Area West Engineers);
- Equestrian Ridge Estates, Placer County (PAR);
- Willow Creek Assessment District Swainson's Hawk Surveys, Sacramento County (PAR);
- Bucks Lake Spotted Owls Surveys, Menasha Corporation, Plumas County (PAR);
- Roseville Water Facilities Project, City of Roseville, Placer County (Geier & Geier Consulting);
- Hidden Falls Planned Unit Development, Placer County (JJD Properties);
- Sugar Bowl Ski Resort Expansion, Placer County (Omni-Means, Engineers/Planners);
- City of Lincoln Waste Water Treatment Plant Expansion, Placer County (City of Lincoln);
- Lucky/Hatch Annexation, San Joaquin County (Greystone Environmental);
- The Heritage at Bickford Ranch, Placer County (Geobotanical Phenomenology);
- Dixon Garden Apartments, Dixon, Solano County (Planning Concepts);
- South Branch 60 kV Pole Line Project, Roseville, Placer County (PAR);
- Smith-Moulton Pipeline Project, Nevada County (PAR);
- Morada Ranch Annexation, San Joaquin County (Omni-Means);
- Clover Valley Lakes Estates EIR, Placer County (Planning Concepts);
- Turtle Island, Loomis, Placer County (Export International);
- Fort Hunter-Liggett Wildlife Resource Surveys, Monterey County (Jones & Stokes Associates);
- Superconducting Super Collider EIR/EIS, Yolo and Solano Counties (EIP Associates);
- South Lake Tahoe Redevelopment Agency EIR, El Dorado County (Wagstaff & Brady);
- Stanford Ranch EIR, Placer County (Jones & Stokes Associates);
- Northeast Roseville Specific Plan EIR, Placer County, Placer County (Jones & Stokes Associates).

Transportation Projects. Prepared Caltrans Natural Environment Study Reports, Categorical Exemption/Exclusions, Preliminary Environmental Study Forms, and other documentation for bridge replacements, interchange modifications, seismic retrofits, road widenings, emergency storm damage repairs, and other transportation projects in Caltrans Districts 1, 2, 3, 4, 5, and 10. Projects include:

- I-580/Isabel Avenue Interchange Project, Livermore, Alameda County (PAR);
- Gladding Road Bridge Replacement, Coon Creek, Placer County (Planning Concepts);
- Lozanos Road Bridge Replacement, Auburn Ravine, Placer County (PAR);
- Coyote Creek Bridge Replacement Project, Calaveras County (PAR);
- Route 99/Route 120 East Interchange Project, Manteca, San Joaquin County (PAR);
- Route 99/Prado Road Interchange, San Luis Obispo County (PAR);
- Ralston Avenue/Route 101 Interchange, Belmont, San Mateo County (PAR);
- Route 1 Improvement Project, Sand City to Seaside, Monterey County, PEAR (PAR);
- Northeast Area Transportation Plan, Constraints Analysis, Sacramento (PAR);
- Wilbur Avenue Overcrossing Project, Antioch, Contra Costa (PAR);
- Alpine Road Storm Damage Repair, San Mateo County (PAR);
- Pescadero Road Storm Damage Repair, San Mateo County (PAR);
- Route 92 Widening, Half Moon Bay, San Mateo County (PAR);
- Route 99/Hammer Lane Interchange Improvements, Stockton, San Joaquin County (PAR);
- Hammer Lane Widening, Stockton, San Joaquin County (PAR);
- La Gonda Way and Paraiso Drive Bridge Seismic Retrofit, Danville, Contra Costa County (PAR);
- Highway 162 Bridge Storm Damage Repair Project, Sacramento River, Glenn County (PAR);
- Norwood Avenue Reconstruction Project, Sacramento County (Planning Center);
- HOV Lane Construction, US 50, Sunrise to El Dorado Blvd., Sacramento/El Dorado Co. (PAR);
- Dry Creek Bridge Replacement Project, Route 99, Butte County (PAR);
- Ladies Canyon Bridge Storm Damage Repair, Sierra County, (PAR);
- Emergency Storm Damage Repair, Routes 49 and 89, Sierra and Nevada Counties, (PAR);
- Emergency Storm Damage Repair Project for: Route 70/89, Feather River Canyon, Route 20, 147, Plumas, Nevada, and Butte Counties, (PAR);
- Interstate 5 - Benjamin Holt/Hammer Lane Interchange project, San Joaquin County (PAR);
- State Route 113/Interstate 5 Connector Study, City of Woodland, Yolo County, California (PAR);
- Frederickson Road Widening, Antioch, Contra Costa County (May Consulting);
- East Lime Kiln Road Reconstruction Project, Nevada County (PAR);
- Lower Sacramento Road and Bridge Widening, Stockton, San Joaquin County (May Consulting);
- Sierra College Boulevard Widening Project, Roseville, Placer County (PAR);
- State Route 50/Folsom Interchange Improvement Project, Sacramento County (PAR);
- Pico Creek Bridge Replacement Project, Route 1, San Luis Obispo County (PAR)
- Burns Creek Bridge Replacement Project, Route 1, Monterey County (PAR);
- Pajaro River Bridge Replacement Project, Monterey and San Luis Obispo Counties (PAR);

- Route 113 Widening/North 1st Street Improvements, Dixon, Solano County (Planning Concepts);
- Bridgeport School Bridge Replacement Project, El Dorado County (PAR);
- State Route 49 Widening, Auburn, Placer County (PAR);
- Claus Road Bridge Widening, Modesto, Stanislaus County (PAR);
- Interstate 80/Enterprise Boulevard Interchange, City of West Sacramento, Yolo County (PAR).

HEP Analysis. Conducted Habitat Evaluation Procedure (HEP) analyses for Farmington Canal Project, Calaveras County, and Calabazas Creek flood control project, Santa Clara County. Co-author of Habitat Suitability Model for Willow Flycatcher.

Land Exchanges. Prepared Biological Assessments/Evaluations for Forest Service land exchanges in the Plumas National Forest. The largest of these was the 11,000 acre Soper-Wheeler Company land exchange, a two-year project requiring management of eight employees and several subconsultants for surveys of rare plants, California spotted owls, northern goshawks, red-legged frogs, and other sensitive species. Other projects include the Crites Mineral Fraction Land Exchange and the Saunders Land Exchange, Plumas National Forest, (PAR Environmental Services, Inc.).

TEACHING EXPERIENCE

Lecturer. Biology 10, UCD Zoology Department (1985): Instructor - biology for non-majors.
Lab Coordinator. Zoology 2L, UCD Zoology Department (1983-1984): Trained and supervised teaching assistants, managed introductory zoology laboratories.
Teaching Assistant. UCD Zoology Department (1977-1983): General Zoology, Vertebrate Structure, Introductory Biology.
Outstanding UCD Graduate Teaching Assistant (1983).

PUBLICATIONS

Beedy, E. C., S. D. Sanders, and D. A. Bloom. 1991. Breeding status, distribution, and habitat associations of the tricolored blackbird (*Agelaius tricolor*), 1850-1989. June 21, 1991. Jones & Stokes Associates (JSA 88-187.) Sacramento, CA. Prepared for UWFWS, Sacramento, CA.

Sanders, S. D. and M. A. Flett. 1989. The ecology of a Sierra Nevada population of Willow Flycatchers (*Empidonax traillii*), 1986 and 1987. California Management Branch Administrative Report No. 89-3, California Department of Fish and Game.

Harris, J. D., S. D. Sanders, and M. A. Flett. 1987. Willow Flycatcher surveys in the Sierra Nevada. Western Birds. 18:27-36.

Flett, M. A. and S. D. Sanders. 1987. Ecology of a Sierra Nevada population of Willow Flycatchers. Western Birds. 1:37-42.

Sanders, S. D. 1983. Foraging Ecology of a Sierra Nevada population of Douglas Tree Squirrels (*Tamiasciurus douglasii*). Ph.D. Dissertation, University of California, Davis.

DECLARATION OF
Michael D. McGuirt

I, **Michael D. McGuirt**, declare as follows:

1. I am presently employed by the California Energy Commission in the **Environmental Protection Office** of the **Siting, Transmission and Environmental Protection Division** as a **Planner II**.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on **Cultural Resources** for the **Orange Grove Peaker** project based on my independent analysis of the application and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 3 NOVEMBER 2008 Signed: M. McGuirt

At: Sacramento, California

MICHAEL D. MCGUIRT, MA, RPA

15310 Abierto Drive ◦ Rancho Murieta, California ◦ 95683-9192 ◦ 916.354.1345 ◦ mikeandbeate@netzero.net

OBJECTIVE

To participate in the consultations that guide the management of heritage resources in native, public, and private trusts, to foster public support for heritage resource conservation through archaeological research and public outreach, and to contribute to the formulation of historic preservation policy.

EDUCATION

MASTER OF ARTS in Anthropology ◦ The University of Texas at Austin May 1996

Area concentration in the North American Southwest. Technical concentrations in geoarchaeology, palynology, and ceramic analysis.

BACHELOR OF ARTS in Anthropology and Archaeological Studies ◦ The University of Texas at Austin December 1990

Area concentrations in Mesoamerica and the Andes. Technical concentration in lithic analysis.

PROFESSIONAL EMPLOYMENT

ENERGY PLANNER II ◦ California Energy Commission, Sacramento, California November 2007 to November 2008

Develop environmental impact analyses of the potential effects that the construction and operation of proposed thermal power plants may have on significant cultural resources. Apply applicable Federal, State, and local statutes and regulations, as they relate to the consideration of cultural resources. Design and execute cultural resource impact analyses that are appropriate to the specific regulatory context for each proposed project. Gather and evaluate information on projects and on cultural resources in project areas. Develop and maintain agency and public relationships to acquire the most useful data and to elicit input in the development of California Energy Commission conditions of certification. Succinctly convey, orally in different public forums and in different written technical formats, the results of cultural resource impact analyses and proposed conditions of certifications meant to mitigate adverse impacts to significant cultural resources. Periodic reviews of licensees' actions to ensure compliance with extant conditions of certification. Oversight of consultants' who are preparing cultural resource impact analyses preservation program.

SENIOR STATE ARCHAEOLOGIST ◦ Office of Historic Preservation, California Department of Parks and Recreation (California State Parks), Sacramento, California December 2004 to December 2005

Out-of-class assignment supervising the Project Review Unit for the California State Historic Preservation Officer (SHPO) in the California Office of Historic Preservation (OHP). As the Acting Chief of Project Review, I managed and trained a staff of eight professionals and one clerical assistant to conduct, on behalf of the SHPO, the review of all Federal agency actions in the State of California under 36 CFR Part 800. 36 CFR Part 800 is the Advisory Council on Historic Preservation's implementing regulation for Section 106 of the National Historic Preservation Act of 1966, and the primary Federal historic preservation program.

ASSOCIATE STATE ARCHAEOLOGIST ◦ Office of Historic Preservation, California Department of Parks and Recreation (California State Parks), Sacramento, California May 2001 to November 2007

Project Review Unit archaeologist for the California State Historic Preservation Officer (SHPO). Consulted under 36 CFR Part 800 on the adequacy of federal agency efforts to comply with Section 106 of

the National Historic Preservation Act (NHPA) of 1966 (16 U.S.C. 470f). Served as SHPO contact person for informal federal agency consultation and formal initiation of Section 106 consultation (36 CFR § 800.3). Reviewed documentation of and provide comment on federal agency determinations and findings (36 CFR §§ 800.4 and 800.5). Negotiated, drafted, and reviewed memoranda of agreement and treatment plans to resolve adverse effects to historic properties (36 CFR § 800.6). Negotiated, drafted, and reviewed program alternatives and management plans (36 CFR § 800.14). Administered federal agency efforts to comply with previously executed agreement documents. Developed and delivered public and professional presentations and workshops on the Section 106 regulatory process in California and the role of the SHPO in Section 106 consultation. Helped create initiatives through the National Park Service's Certified Local Government (CLG) program to encourage the development of local community archaeological site preservation plans. Evaluated and recommended proposals for CLG grants and helped administer resultant grants. Reviewed and provided comment on National Register of Historic Places (National Register) property nominations, and prepared and presented staff reports on the nominations to the State Historical Resources Commission. Member of committee to revise the Comprehensive Statewide Historic Preservation Plan for California, and author of the archaeology section of the plan. The Office of Historic Preservation's (OHP) liaison to the Society for California Archaeology (June 2002 to November 2008).

ARCHAEOLOGICAL CONSULTANT ∘ Kaniakapūpū Project, O`ahu, Hawai`i ∘ Department of Anthropology, University of Hawai`i at Mānoa, Honolulu, Hawai`i June 2000

Recorded exposed architectural elements and directed test excavations to reconstruct building sequences of Native Hawaiian stone architecture. Advised on the interpretation of archaeological stratigraphy and on the field application of archaeological mapping methods and techniques.

ENVIRONMENTAL SPECIALIST III ∘ Jones & Stokes, Sacramento, California February 1999 to May 2001

Designed, conducted, and managed short- and long-term archaeological projects in California, Nevada, and New Mexico to comply with Sections 106 and 110 of the NHPA. Prepared proposals. Assisted with client contract negotiations. Conducted archaeological record searches and archival research. Directed Phase I pedestrian inventory surveys and test excavations for Phase II evaluations. Analyzed material culture assemblages. Prepared technical reports and regulatory compliance documents including National Register property and district evaluations, and monitoring and discovery plans. Represented clients in consultations with federal and state agencies, and coordinated and managed clients' compliance with federal cultural resource regulations and the cultural resource regulations of California, Nevada, and New Mexico.

ARCHAEOLOGICAL TECHNICIAN ∘ B.O.A.S., Inc., Seattle, Washington August 1998 to October 1998

Assisted with data recovery excavations on a short-term cultural resource management contract.

ASSISTANT ANTHROPOLOGIST ∘ Bernice Pauahi Bishop Museum, Honolulu, Hawai`i August 1996 to June 1998

Assisted with archaeological project design, preparation of proposals, and client contract negotiations, directed Phase I pedestrian inventory surveys, test excavations for Phase I subsurface inventory surveys, test excavations for property evaluations, and data recovery excavations, and assisted with preparation of technical reports on short-term cultural resource management contracts. Analyzed field records, prepared site reports and synthetic report chapters, and analyzed and prepared reports on lithic assemblages for Phases I–III of a long-term federal highway project (Interstate Route H–3). Conducted research in Hawaiian archaeology, and delivered public and professional presentations of that research. Advised on the integration of geoarchaeological methods and techniques into cultural resource management field efforts, and on geoarchaeological interpretations of extant field records, and designed and conducted geoarchaeological components of fieldwork for short–term cultural resource management contracts.

FIELD DIRECTOR ∘ Chersonesos Project, Ukraine, Eastern Europe ∘ Institute of Classical Archaeology, University of Texas at Austin, Austin, Texas May 1996 to July 1996

Assisted in archaeological project design. Directed a geoarchaeological reconnaissance, a pedestrian inventory survey, archaeological mapping, test excavations, and data recovery excavations in the National Preserve of Tauric Chersonesos. Conducted on-site project presentations for the United States Ambassador to Ukraine, and Ukrainian and Russian archaeological scholars. Assisted in the preparation and implementation of archaeological site preservation plans. Taught archaeological field methods and techniques to graduate students. Prepared portion of requisite field report for Crimean Archaeological Council, Simferopol.

ASSISTANT FIELD DIRECTOR ∘ Chersonesos Project, Ukraine, Eastern Europe ∘ Institute of Classical Archaeology, University of Texas at Austin, Austin, Texas May 1995 to July 1995

Assisted in the direction of data recovery excavations in the National Preserve of Tauric Chersonesos. Taught archaeological field methods and techniques to graduate students. Advised on the interpretation of archaeological stratigraphy.

ARCHEOLOGIST I ∘ Archeology Survey Team ∘ Texas Parks and Wildlife Department, Austin, Texas December 1994 to May 1995

Assisted in the direction of pedestrian inventory surveys, the preparation of cultural resource management plans, and the preparation of state site forms and reports of investigations. Advised on the integration of global positioning system (GPS) technology and the field methods of archaeological survey.

RESEARCH ASSISTANT ∘ Colha Project, Belize, Central America ∘ Department of Anthropology, University of Texas at Austin, Austin, Texas July 1994 to August 1994

Conducted an extensive ground survey to correct the published base map for the Maya site of Colha. Assisted in mapping of surface architectural ruins. Directed a test excavation crew. Assisted in the preparation of the field report.

ARCHAEOLOGIST ∘ Lower Colorado River Authority, Austin, Texas February 1994 to December 1994

Designed and implemented trial mitigation plans for archaeological sites threatened by fluvial and lacustrine erosion. Assisted in pedestrian inventory surveys and test excavations, the preparation of state site forms, the development of the agency's database of its archaeological site inventory, and public education initiatives that included site tours for primary and secondary students, and workshops for primary and secondary teachers.

COLLEGIATE EXPERIENCE

TEACHING ASSISTANT ∘ Archaeological Analysis ∘ Department of Anthropology, University of Texas at Austin, Austin, Texas August 1993 to December 1993

Presented undergraduate lectures on archaeological method and theory. Wrote and graded examinations. Advised students.

TEACHING ASSISTANT ∘ Archaeological Field School, New Mexico ∘ Department of Anthropology, University of Texas at Austin, Austin, Texas May 1993 to July 1993

Taught archaeological field methods and techniques to undergraduate and graduate students.

PROJECT ARCHAEOLOGIST ◦ WS Ranch Project, New Mexico ◦ Department of Anthropology, University of Texas at Austin, Austin, Texas May 1992 to July 1992, May 1993 to July 1993

Designed and prepared proposals for two field seasons. Addressed New Mexico State Historic Preservation Office and United States Forest Service comments on the proposals. Directed test excavations and data recovery excavations for two field seasons. Conducted geoarchaeological, palynological, and material culture analyses. Prepared a report of the research.

VOLUNTEER LITHIC ANALYST ◦ WS Ranch Project, New Mexico ◦ Department of Anthropology, University of Texas at Austin September 1991 to December 1991

Analyzed lithic tool collections from San Francisco and Three Circle phase Mogollon sites on the Gila National Forest.

VOLUNTEER ARCHAEOLOGICAL TECHNICIAN ◦ WS Ranch Project, New Mexico ◦ Department of Anthropology, University of Texas at Austin June 1991

Assisted in test excavations for the Phase II evaluations of San Francisco and Three Circle phase Mogollon sites on the Gila National Forest in advance of the development of an interpretative trail.

VOLUNTEER LITHIC ANALYST ◦ WS Ranch Project, New Mexico ◦ Department of Anthropology, University of Texas at Austin September 1990 to December 1990

Analyzed a lithic tool collection from a Three Circle to Tularosa phase Mogollon site on the Gila National Forest and submitted a report of the analysis.

ARCHAEOLOGICAL TECHNICIAN ◦ Archaeological Research, Inc., Austin, Texas July 1990

Assisted in a Phase I pedestrian inventory survey on the Sitgreaves National Forest, Arizona in advance of a timber sale.

ARCHAEOLOGICAL TECHNICIAN ◦ New World Consultants, Inc., Albuquerque, New Mexico June 1990

Assisted in a Phase I pedestrian inventory survey on the Gila National Forest, New Mexico in advance of a timber sale.

UNDERGRADUATE PARTICIPANT ◦ Archaeological Field School, New Mexico ◦ Department of Anthropology, University of Texas at Austin May 1990 to July 1990

Laid out mapping control networks and assisted in test excavations on a Reserve phase Mogollon site and a Three Circle to Tularosa phase Mogollon site, and assisted in a pedestrian inventory survey of the upper San Francisco River Valley on the Gila National Forest.

TECHNICAL KNOWLEDGE AND SKILLS

CULTURAL RESOURCE AND ENVIRONMENTAL LAW

Expert knowledge of Section 106 of the National Historic Preservation Act (NHPA) of 1966 (16 U.S.C. 470f), as amended, and the regulation that implements Section 106 (36 CFR Part 800). Thorough knowledge of Section 110 of the NHPA and the U.S. Army Corps of Engineers' Appendix C to 33 CFR Part 325. Working knowledge of the Native American Graves Protection and Repatriation Act of 1990, the National Environmental Policy Act of 1969, the Archaeological Resource Protection Act of 1979, the California Environmental Quality Act of 1970, and cultural resource statutes, regulations, and guidelines for the states of California, Hawai`i, Nevada, New Mexico, and Texas.

GEOARCHAEOLOGY

Specialty in geoarchaeology with emphases on processual and historical geomorphology, paleoecology, stratigraphy, pedology, and sedimentology. Strong ability to reconstruct the depositional history and paleoenvironment of archaeological resources at multiple areal scales. Design and implement geoarchaeological data collection strategies. Analyze and interpret resultant data. Analyze and interpret geoarchaeological data from extant field records. Expertise used to provide superior contexts for material culture assemblages and architecture at sites in Hawai`i, Ukraine, and New Mexico.

MAPPING AND SPATIAL ANALYSIS

Five years of professional land surveying experience prior to 1988. Thorough knowledge of principles and techniques of land surveying, of a wide variety of optical instruments, of GPS receivers, and of the integration and manipulation of positional and attribute data from multiple sources in drafting and GIS applications. Expertise used to develop archaeological mapping and GIS programs for projects in California, Ukraine, Belize, Hawai`i, New Mexico, and Texas.

ARCHAEOLOGICAL SURVEY AND EXCAVATION

Archeological survey and excavation experience on sites that represent a wide range of cultures, time periods, and environments. Survey experience in California on nineteenth and twentieth century Karuk sites and late nineteenth to early twentieth century Euroamerican mining sites, in Nevada on Pre-Archaic, Archaic, and Protohistoric Native American sites and mid-nineteenth to early twentieth century railroad, mining, emigrant trail, and homestead sites with European, Euroamerican, and Asian components, in northeastern and southern Texas on Paleoindian, Archaic, Caddoan, and early nineteenth to early twentieth century Euroamerican sites, in western New Mexico and eastern Arizona on Archaic and Mogollon sites, on the Na Pali Coast of Kaua`i, Hawai`i on precontact Native Hawaiian sites and in the southern Crimea, Ukraine on Neolithic, Bronze Age, Greek, Roman, Byzantine, and nineteenth century Russian sites.

Excavation experience in California on late nineteenth to early twentieth century Euroamerican mining sites, early twentieth century Euroamerican homesteads, and a Feather River site with Maidu and Euroamerican components, in western New Mexico on Early Pithouse period, Three Circle, Reserve, and Tularosa phase Mogollon sites, in eastern Belize on the Middle Preclassic to Postclassic Maya site of Colha, on O`ahu, Hawai`i on early postcontact to early twentieth century sites with Native Hawaiian, Chinese, Japanese, European, and Euroamerican components in downtown Honolulu, on the East Loch of Pearl Harbor, and in Nu`uanu Valley, in Washington on an Olcott phase Native American site, and in the southern Crimea, Ukraine on Hellenistic Greek and Roman sites.

Experience in the excavation of adobe and stone architecture, house pits or pithouses, former sites of wooden and grass structures, ancient roadways, hearths, refuse pits, storage pits, and extramural surfaces.

MATERIAL ANALYSES

Experience with a wide range of prehistoric and historic material culture. Analyzed and reported on lithic assemblages from Hawai`i and New Mexico, ceramic assemblages from Ukraine and New Mexico, sediments from Hawai`i, Ukraine, and New Mexico, and fossil pollen from New Mexico. Ability to identify and date archaeological site assemblages with late eighteenth to early twentieth century architectural materials, bottle glass, tin cans, and American, British, Chinese, and Japanese ceramics.

COMPUTER LITERACY

Experience with diverse word processing, spreadsheet, database, drafting, graphics, data processing, and GIS applications on PC (Windows XP) and MacIntosh platforms in networked environments. Word processing applications used include Microsoft Word and WordPerfect. Spreadsheet applications used include Microsoft Excel. Database applications used include Microsoft Access, Quattro Pro, FoxPro, and

MinArk. Drafting applications used include AutoCAD and Surfer. Graphics applications used include CorelDraw. Data processing applications used include PathFinder, SurveyLink, and GeoLink. GIS applications used include ArcView.

RECENT PROFESSIONAL DEVELOPMENT

CULTURAL RESOURCE AND ENVIRONMENTAL LAW

ACHP - FHWA Advanced Seminar: Reaching Successful Outcomes in Section 106 Review • Vancouver, Washington • Advisory Council on Historic Preservation, Don Klima and Carol Legard; Federal Highway Administration, Mary Ann Naber October 2007

NEPA Compliance and Cultural Resources • Portland, Oregon • National Preservation Institute, Joe Trnka October 2007

Section 106: How to Negotiate and Write Agreements • Sacramento, California • National Preservation Institute, Claudia Nissley November 2004

Consultation with Indian Tribes on Cultural Resource Issues • Sacramento, California • National Preservation Institute, Thomas F. King and Reba Fuller September 2003

Section 106: How to Negotiate and Write Agreements • The Presidio, San Francisco, California • National Preservation Institute, Thomas F. King May 2002

Introduction to CEQA • Sacramento, California • University of California, Davis, Continuing and Professional Education, Ken Bogdan and Terry Rivasplata July 2000

TECHNICAL ARCHAEOLOGY

Introduction to Historic Site Survey, Preliminary Evaluation, and Artifact ID • West Sacramento, California • California Department of Transportation and California Department of Parks and Recreation, Glenn Farris, Larry Felton, Julia Huddleson, Anmarie Medin, Pete Schulz, Judy Tordoff, and Kimberly Wooten September 2006

Principles of Geoarchaeology for Transportation Projects (Course No. 100246). Sacramento, California • California Department of Transportation, Graham Dalldorf, Glenn Gmoser, Jack Meyer, Stephen Norwick, Adrian Praetzellis, and William Silva October 2006

INFORMATION TECHNOLOGY AND CULTURAL RESOURCE MANAGEMENT

GIS: Practical Applications for Cultural Resource Projects • Sacramento, California • National Preservation Institute, Deidre McCarthy September 2006

STATE GOVERNMENT

Introduction to California State Parks • Asilomar, Monterey County, California • California Department of Parks and Recreation and Monterey Peninsula College December 2001

PUBLICATIONS, REPORTS, PAPERS, AND WORKSHOPS

Darcangelo, Jennifer, John Sharp, Michael D. McGuirt, Andrea Galvin, and Clarence Caesar

2004 *Section 106 for Experienced Practitioners: Consulting with the California SHPO (GEV4111).* Course taught on 8 September in Oakland to California Department of Transportation cultural resources personnel and private sector cultural resource consultants (8 hours).

Darcangelo, Jennifer, John Sharp, Michael D. McGuirt, and Andrea Galvin

2005 *How to Consult with the California SHPO.* Workshop presented on 23 April at the 39th Annual Meeting of the Society for California Archaeology, Sacramento, California (6 hours).

Jones & Stokes

1999a *Cultural Resource Inventory Report for Williams Communications, Inc. Fiber Optic Cable System Installation Project, Wendover, Nevada to the California State Line.* Volume 1: Draft Report. July. (JSA 98-358.) Sacramento, California. Prepared for Williams Communications, Inc., Tulsa, Oklahoma.

1999b *Cultural Resources Report for the Williams Communications, Inc. Interstate 80 Fiber Optic Cable System Installation Project.* Volume I. September. (JSA 98-358.) Submitted to Williams Communications, Inc., Tulsa, Oklahoma. On file with the State Historic Preservation Office, Carson City, Nevada.

1999c *Archaeological Site Avoidance and Monitoring Plans for Williams Communications' Fiber Optic Cable Installation In the Union Pacific Railroad Right-of-Way, Doña Ana County to Hidalgo County, New Mexico.* October. (JSA98-379.) Sacramento, California. Prepared for Williams Communications, Inc., Tulsa, Oklahoma.

2001 *Final Phase II Cultural Resource Evaluation for the Kramer Mining District, Edwards AFB, Kern and San Bernardino Counties, California.* Volume I. November. Sacramento, California. On file with the Base Historic Preservation Officer, Edwards AFB, California.

Lebo, Susan A. and Michael D. McGuirt

1997 *Geoarchaeology at 800 Nuuanu: Archaeological Inventory Survey of Site 50-80-14-5496 (TMK1-7-02:02), Honolulu, Hawai`i.* Department of Anthropology, Bishop Museum, Honolulu. (100 pp.) Submitted to Bank of Hawaii, Honolulu. On file with the State Historic Preservation Division, Honolulu.

1998a *Assessments of Stone Architecture: a Case Study from North Hālawa Valley, O`ahu.* Paper presented at the 11th Annual Hawaiian Archaeology Conference of the Society for Hawaiian Archaeology, Kailua-Kona, Hawai`i.

1998b Pili *Grass, Wood Frame, Brick, and Concrete: Archaeology at 800 Nuuanu.* Department of Anthropology, Bishop Museum, Honolulu. (142 pp.) Submitted to Bank of Hawaii, Honolulu. On file with the State Historic Preservation Division, Honolulu.

Lennstrom, Heidi A., P. Christiaan Klieger, Michael D. McGuirt, and Susan A. Lebo

1997 *Archaeological Reconnaissance of Pouhala Marsh, `Ewa District, O`ahu.* Department of Anthropology, Bishop Museum, Honolulu. (14 pp.) Submitted to Ducks Unlimited, Inc., Rancho Cordova, California. On file with the State Historic Preservation Division, Honolulu.

McGuirt, Michael D.

1996 *The Geoarchaeology and Palynology of an Early Formative Pithouse Village in West-Central New Mexico.* Unpublished M.A. thesis, Department of Anthropology, University of Texas at Austin.

1998 50-80-10-2010, 50-80-10-2016, 50-80-10-2088, and 50-80-10-2134. In *Activities and Settlement in an Upper Valley: Data Recovery and Monitoring Archaeology in North Hālawa Valley, O`ahu*, vols. 2a and 2b, edited by Department of Anthropology, Bishop Museum, pp. 1–3, 1–44, 1–5, and 1–46. Department of Anthropology, Bishop Museum, Honolulu. Submitted to State of Hawaii, Department of Transportation, Honolulu. On file with the State Historic Preservation Division, Honolulu.

2002 Committee Reports, OHP Liaison. *SCA Newsletter* 36(3):4–5.

2004 Committee Reports, OHP Liaison. *SCA Newsletter* 38(2): 7, 38(3):6–8.

2006 Preservation Archaeology. In *California Statewide Historic Preservation Plan: 2006–2010*, edited by Marie Nelson, pp. 8–15. California Department of Parks and Recreation's Office of Historic Preservation, Sacramento. Submitted to the National Park Service, Washington, D.C. On file at the California Office of Historic Preservation, Sacramento.

2008 Dealing with Multi-element Cultural Resources under Section 106. In *Historic Properties Are More Than Meets the Eye: Dealing with Historical Archaeological Resources under the Regulatory Context of Section 106 and CEQA*. Session presented on 25 April at the *33rd Annual California Preservation Conference* of the California Preservation Foundation in Napa, California, moderated by Michelle Messinger and Michael D. McGuirt (1 1/2 hours).

McGuirt, Michael D. and Leigh Ann Garcia

1991 Lithic Stew at Apache Creek: the 1990 Chipped Stone Artifact Collection from LA 2949. In *An Analysis of Lithic Artifacts Recovered During the 1990 Test Excavations at the Apache Creek Site (LA 2949), Gila National Forest, West Central New Mexico*, edited by James A. Neely and Jay R. Peck, pp. 13–61. Department of Anthropology, University of Texas at Austin. Submitted to United States Forest Service. On file at the Gila National Forest Office, Silver City, New Mexico.

McGuirt, Michael D. and Leslie H. Hartzell

1997 50-80-10-2139 and 50-80-10-2459. In *Imu, Adzes, and Upland Agriculture: Inventory Survey Archaeology in North Hālawa Valley, O`ahu*, vols. 2c and 2d, edited by Department of Anthropology, Bishop Museum, pp. 1–17 and 1–5. Department of Anthropology, Bishop Museum, Honolulu. Submitted to State of Hawaii, Department of Transportation, Honolulu. On file with the State Historic Preservation Division, Honolulu.

1998 Chapter 1: Introduction. In *Activities and Settlement in an Upper Valley: Data Recovery and Monitoring Archaeology in North Hālawa Valley, O`ahu*, vol. 1, edited by Department of Anthropology, Bishop Museum, pp. 1–14. Department of Anthropology, Bishop Museum, Honolulu. Submitted to State of Hawaii, Department of Transportation, Honolulu. On file with the State Historic Preservation Division, Honolulu.

McGuirt, Michael D. and Margaret Howard

1995 Prehistoric Background. In *Archeological Survey of Tyler State Park, Smith County, Texas*, edited by Margaret Howard, pp. 16–31. Texas Parks and Wildlife Department, Austin. On file with the Texas Historical Commission, Austin, Texas Antiquities Committee Permit No. 1484.

McGuirt, Michael D. and Shannon P. MacPherron

1998 50-80-10-2137 . In *Activities and Settlement in an Upper Valley: Data Recovery and Monitoring Archaeology in North Hālawa Valley, O`ahu*, vol. 2b, edited by Department of Anthropology, Bishop Museum, pp. 1–86. Department of Anthropology, Bishop Museum, Honolulu. Submitted to State of Hawaii, Department of Transportation, Honolulu. On file with the State Historic Preservation Division, Honolulu.

McGuirt, Michael D. and Deborah I. Olszewski

1997 50-80-10-2256. In *Imu, Adzes, and Upland Agriculture: Inventory Survey Archaeology in North Hālawa Valley, O`ahu*, vol. 2d, edited by Department of Anthropology, Bishop Museum, pp. 1–9. Department of Anthropology, Bishop Museum, Honolulu. Submitted to State of Hawaii, Department of Transportation, Honolulu. On file with the State Historic Preservation Division, Honolulu.

Mikesell, Stephen, Michael McGuirt, and Trish Fernandez

2007 Introduction to the White Papers in State Historical Resources Commission Archaeology Committee White Papers. *SCA Newsletter* 41(1):18–21.

Sharp, John, Michael D. McGuirt, Jennifer Darcangelo, and Andrea Galvin

2004 *How to Consult with the California SHPO.* Workshop presented on 18 March at the 38th Annual Meeting of the Society for California Archaeology, Riverside, California (4 hours).

Professional and Honorary Associations

Register of Professional Archaeologists
Society for American Archaeology
Society for California Archaeology
Honor Society of Phi Kappa Phi

References and Writing Samples

Available upon request.

DECLARATION OF
Amanda Blosser

I, Amanda Blosser, declare as follows:

1. I am presently employed by the California Energy Commission in the Facilities Siting Office of the Energy Facilities Siting Division as a Planner II.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepared the staff testimony on Cultural Resources, Orange Grove Project based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 11/5/08 Signed: [signature]

At: Sacramento, California

Amanda Blosser

Planner II, California Energy Commission
1516 9th Street
Sacramento, CA 95814
916.654.4884
Ablosser@state.energy.ca.gov

Summary of Qualifications

Ten years experience in the field of historic preservation and cultural resource management. Expertise includes survey of architectural and engineering resources, assessment of effects on historic resources, and preparation of local and state landmark applications.

Professional Experience

California Energy Commission, Planner II, Environmental Office-Facilities Siting, May 2008-present.

Perform technical analysis for complex facility siting cases and planning studies in the area of cultural resources for Applications of Certification and Small Power Plant Exemptions.

California Office of Historic Preservation, Staff Historian II/, Project Review Unit, November 2005- present.

Major responsibilities include reviewing and providing comment, both from an academic and regulatory perspective, on project impacts to cultural resources, assessment of adequacy of reports prepared for review, recommending revisions to submission, and prepare agreement documents to resolve adverse affects to cultural resources, assists federal agencies in completing compliance with National Historic Preservation Act.

JRP Historical Consulting Services, Staff Historian II/Architectural Historian II, October 16, 2001- present.

Major responsibilities include inventory and evaluation of historic resources, preparation of environmental documents and other reports regarding compliance with state and federal environmental regulations and policies, undertaking site specific and general historical research, writing and compiling physical descriptions and integrity assessments of historic resources for historic property surveys, prescribing mitigation measures for historic resources as necessary and completing mitigation measures, assisting or training other staff in historical research methods and techniques. Other work related experience includes client and review agency coordination, project management, approaches, project budgets and schedules, proposals for projects, managing multiple projects and staff members, interaction with clients and various federal, state, and local agencies and the public.

Independent Architectural Historian and Preservation Planner, August 15, 1999-September 15, 2001.

Projects while an independent contractor encompassed preparation of small inventory and evaluation and historic architecture survey reports for city planning organizations and other municipal agencies, preparation of National Register of Historic Places nomination forms,

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preparation of Federal Tax Credit applications, and authoring land use histories. Additional project work included participating in design guideline recommendations for historic resources during master planning process.

Student Intern, Colonial Williamsburg, Architectural History and Material Conservation Departments, January 21, 1999-April 15, 1999.
Responsibilities included completion of research tasks for staff, undertaking paint analysis, conservation of objects, and preparation of written documentation. All work was undertaken under supervision of Architectural Historians and furniture conservators.

Ft. Davis National Historic Site, Student Architectural Conservator, June 15, 1998-August 15, 1998.
Responsibilities included preparation of written and photographic documentation, conducting condition assessments, undertaking plaster and paint stabilization and consolidation for historic structures within the Ft. Davis National Historic site. All work was undertaken in conjunction with additional architectural conservators and student architectural conservators.

Teaching Assistant, Texas Tech University, Architecture History, January 21, 1998 - May 15, 1998.

Education

Bachelor of Arts in Art History, University of Texas, Austin, 1995.
Undergraduate Deans' Research Scholarship Recipient, 1995.

Master of Science in Architecture, Historic Preservation, Texas Tech University, 1999.
Thesis: *Paint Analysis at Colonial Williamsburg, An Evolution of Technique.*

Los Rios Community College, GIS Applications certificate, currently enrolled.

Professional Memberships and Community Activities

Vice-President, Northern California Chapter of the Society of Architectural Historians.

Presenter, "Restoring Wood Windows," September 2005, 2006, 2007 at various locations.

Presenter, "Researching Your Historic Property," *Fainted Ladies Restoration Seminar*, October 16, 2004.

Society of Architectural Historians.

California Garden and Landscape History Society.

DECLARATION OF
Beverly E. Bastian

I, **Beverly E. Bastian**, declare as follows:

1. I am presently employed by The California Energy Commission in the **Siting, Transmission, and Environmental Protection Division** as a **Planner II**.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I assisted in the preparation of the staff testimony on **Cultural Resources,** for the Orange Grove Project based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: November 3, 2008 Signed: Beverly E. Bastian

At: Sacramento, California

Beverly E. Bastian
1516 Ninth Street MS 40
Sacramento, CA 95814-5504
(916) 654-4840 email: bbastian@energy.state.ca.us

Education

School	Field	Degree	Year
University of California, Davis	Anthropology	B.A	1967
University of California, Davis	Anthropology	M.A	1969
Tulane University	Anthropology	A.B.D.	1975
University of Mississippi	American History	(courses only)	1989
University of California, Santa Barbara	Public (American) History and Historic Preservation	A.B.D.	1996

Experience

State of California, California Energy Commission *2005 to present*
Planner II, Energy Facilities Siting Division, Environmental Office, Biological and Cultural Unit,
All tasks related to the production of the cultural resources sections of CEQA-equivalent (California Environmental Quality Act) documents for the environmental review of proposed power plants in California, including: Evaluating data in applications; writing data requests to applicants and doing independent research to compile an inventory of and evaluate the historical/cultural significance of cultural resources subject to significant impacts from proposed projects; providing and receiving information in public hearings on applications; analyzing all pertinent data; writing Staff Assessments of impacts; developing mitigation measures to reduce to insignificant any impacts to significant cultural resources; providing expert testimony on my analyses and findings in public hearings; and reviewing compliance with mitigation measures during the construction, operation, and decommissioning of certified power plants. Additional tasks include: providing prefiling assistance to applicants, reviewing the CEQA documents of sister state agencies; consulting and advising cultural resources specialists in sister state agencies; coordinating and reviewing the work of Commission cultural resources consultants; and developing internal procedures and guidelines to improve cultural resources review of applications.

State of California, Department of Parks and Recreation *2001 to 2005*
Historian II, Cultural Resources Division, Cultural Resources Support Unit
Major and complex historical and historic architectural investigations and studies dealing with the significance, integrity, and management of historic buildings, structures, and landscapes in California's state parks; participation in interdisciplinary teams and project assignments; preparation of technical reports and correspondence; inventorying and evaluating historic properties; coordinating the statewide registration of historical properties; assessing the eligibility of historic properties to the National Register of Historic Places and the California Register of Historical Resources; reviewing environmental documents and providing technical analyses of major Departmental projects to determine impacts to cultural resources under State and federal laws; identifying resource issues and constraints; establishing allowable use and development guidelines; developing approaches to protect, enhance, and perpetuate cultural resources under relevant State and federal laws, regulations, and standards; proposing and developing programs, policies, and budgets to meet Department's historic preservation missions.

Department of Social Sciences, American River College *2000 to 2002*
Instructor (part-time), American History
Creation and presentation of classroom lectures, selection of assigned texts and readings, creation and administration of quizzes and examinations, assignment and supervision of student research papers, student consultation in office hours, grading of all quizzes, tests, and papers, and assigning final student grades. These research, organizing, and teaching skills demonstrate ability to organize information, to speak effectively to the public, and to train and direct other personnel.

Department of Sociology and Anthropology, University of Mississippi *1987 to 1989*
Archaeologist, Center for Archaeological Research
All tasks for the completion of the historical archaeological part of an archaeological survey and testing program final report related to a U. S. Army Corps of Engineers erosion control project in twelve north-central Mississippi counties, including: Coordinating the activities of a field crew and the research of historians working in archives; setting up an artifact database using survey data to generate statistical summaries for discovered historical archaeological sites; gathering historical settlement and land-use data for twelve counties; conducting a special statistical analysis and synthesis of historical data only, focusing on pre-and post-Civil War land tenure and agricultural production for plantations in two counties where soil fertility contrasted; synthesizing data from all sources, collaborating on the final cultural resources management report with archaeologists specializing in prehistory and survey and sampling methodology; presenting findings at the annual meeting of the Society for Historical Archaeology in 1989.

Gilbert Commonwealth, Inc. *1984 to 1987*
Historical Archaeologist and Project Manager, Environmental Unit
All tasks as Principal Investigator for six major historical archaeological and/or historical architectural cultural resources management projects done under contract to federal, state, and local governments, including: Writing winning proposals for these projects; negotiating and managing project budgets; gathering/supervising the gathering of historical, oral historical, and archaeological data; analyzing/supervising the analysis of gathered data; and writing/supervising the writing of reports of findings, along with the creation of maps, illustrations, and data tables for these reports; serving as the historian and historical preservationist on several multidisciplinary teams tasked with siting the routes for several major power lines in east Texas.

Tennessee Valley Authority (personal services contract) *1979 to 1981, 1983-1984*
Historical Archaeologist (self-employed)
All tasks as Principal Investigator for various cultural resources management projects in areas affected by TVA construction, the most significant of which were: the complete excavation of and report on seven nineteenth-century log-cabin sites in Cedar Creek Reservoir in northwestern Alabama; and all historical research, the field work, and the report for the underwater remote-sensing reconnaissance and underwater videotaping of sunken Civil War cargo boats and gunboats at Johnsonville, Tennessee, in the western part of the Tennessee River.

Other Archaeological Projects *1966 to 1981*

Professional Societies

Register of Professional Archaeologists, #10683
Society for Historical Archaeology
National Council on Public History
Vernacular Architecture Forum
Society for California Archeology
California Council for the Promotion of History

DECLARATION OF
Alvin J. Greenberg, Ph.D.

I, **Alvin J. Greenberg, Ph.D.** declare as follows:

1. I am presently a consultant to the California Energy Commission, Energy Facilities Siting and Environmental Protection Division.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on the **Public Health, Hazardous Materials Management, and Worker Safety/Fire Protection** sections for the **Orange Grove Project** based on my independent analysis of the amendment petition, supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 10/31/08 Signed: _____

At: Sacramento, California

Risk Science Associates

121 Paul Dr., Suite A, San Rafael, Ca. 94903-2047
415-479-7560 fax 415-479-7563
e-mail agreenberg@risksci.com

Name & Title: **Alvin J. Greenberg, Ph.D., FAIC, REA, QEP**
Principal Toxicologist

Dr. Greenberg has had over two decades of complete technical and administrative responsibility as a team leader in the preparation of human and ecological risk assessments, air quality assessments, hazardous materials handling and risk management/prevention, infrastructure vulnerability assessments, occupational safety and health, hazardous waste site characterization, interaction with regulatory agencies in obtaining permits, and conducting lead surveys and studies. He has particular expertise in the assessment of dioxins, lead, diesel exhaust, petroleum hydrocarbons, mercury, the intrusion of subsurface contaminants into indoor air, and the preparation and review of public health/public safety sections of EIRs/EISs. Dr. Greenberg's expertise in risk assessment has led to his appointment as a member of several state and federal advisory committees, including the California EPA Advisory Committee on Stochastic Risk Assessment Methods, the US EPA Workgroup on Cumulative Risk Assessment, the Cal/EPA Peer Review Committee of the Health Risks of Using Ethanol in Reformulated Gasoline, the California Air Resources Board Advisory Committee on Diesel Emissions, the Cal/EPA Department of Toxic Substances Control Program Review Committee, and the DTSC Integrated Site Mitigation Committee. Dr. Greenberg is the former Chair of the Bay Area Air Quality Management District Hearing Board, a former member of the State of California Occupational Health and Safety Standards Board (appointed by the Governor), and former Assistant Deputy Chief for Health, California OSHA. And, since the events of 9/11, Dr. Greenberg has been the lead person for developing vulnerability assessments, power plant security programs, and conducting safety and security audits of power plants for the California Energy Commission and has assisted the CEC in the assessment of safety and security issues for proposed LNG terminals. In addition to providing security expertise to the State of California, Dr. Greenberg was the Team Leader and main consultant to the State of Hawaii on the updating of their Energy Emergency Preparedness Plan.

Years Experience: 26

Education:

B.S. 1969 Chemistry, University of Illinois Urbana

Ph.D. 1976 Pharmaceutical/Medicinal Chemistry, University of California, San Francisco

Postdoctoral Fellowship 1976-1979 Pharmacology/Toxicology, University of California, San Francisco

Postgraduate Training 1980 Inhalation Toxicology, Lovelace Inhalation Toxicology Research Institute, Albuquerque, NM

Professional Registrations:

Board Certified as a Qualified Environmental Professional (QEP)
California Registered Environmental Assessor - I (REA)
Fellow of the American Institute of Chemists (FAIC)

Professional Affiliations:

Society for Risk Analysis
Air and Waste Management Association
American Chemical Society
American Association for the Advancement of Science
National Fire Protection Association

Technical Boards and Committee Memberships - Present:

Squaw Valley Technical Review Committee
(appointed 1986)

Technical Boards and Committee Memberships - Past:

July 1996 – March 2002
Member, Bay Area Air Quality Management District Hearing Board
(Chairman 1999-2002)

September 2000 – February 2001
Member, State Water Resources Control Board Noncompliant Underground Tanks Advisory Group

January 1999 – June 2001
Member, California Air Resources Board Advisory Committee on Diesel Emissions

January 1994 - September 1999
Vice-Chairman, State Water Resources Control Board Bay Protection and Toxic Cleanup Program Advisory Committee

September 1998
Member, US EPA Workgroup on Cumulative Risk Assessment

April 1997 - September 1997
Member, Cal/EPA Private Site Manager Advisory Committee

January 1986 - July 1996
Member, Bay Area Air Quality Management District Advisory Council
(Chairman 1995-96)

January 1988 - June 1995
Member: California Department of Toxic Substance Control Site Mitigation Program Advisory Group

January 1989 - February 1995
Member: Department of Toxics Substances Control Review Committee, Cal-EPA

October 1991 - February 1992
Chair: Pollution Prevention and Waste Management Planning Task Force of the Department of Toxics Substances Control Review Committee, Cal-EPA

September 1990 - February 1991
Member: California Integrated Waste Management Board Sludge Advisory Committee

September 1987 - September 1988
ABAG Advisory Committee on Regional Hazardous Waste Management Plan

March 1987 - September 1987
California Department of Health Services Advisory Committee on County and Regional Hazardous Waste Management Plans

January 1984 - October 1987
Member, San Francisco Hazardous Materials Advisory Committee

March 1984 - March 1987
Member, Lawrence Hall of Science Toxic Substances and Hazardous Materials Education Project Advisory Board

Jan. 1, 1986 - June 1, 1986
Member, Solid Waste Advisory Committee, Governor's Task Force on Hazardous Waste

Jan. 1, 1983 - June 30, 1985
Member, Contra Costa County Hazardous Waste Task Force

Sept. 1, 1982 - Feb. 1, 1983
Member, Scientific Panel to Address Public Health Concerns of Delta Water Supplies, California Department of Water Resources

Present Position

January 1983- present
Owner and principal with Risk Sciences Associates, a Marin County, California, environmental consulting company specializing in multi-media human health and ecological risk assessment, air pathway analyses, hazardous materials management-infrastructure security, environmental site assessments, review and evaluation of EIRs/EISs, preparation of public health and safety sections of EIRs/EISs, and litigation support for toxic substance exposure cases.

Previous Positions

Jan. 2, 1983 - June 12, 1984
Member, State of California Occupational Safety and Health Standards Board (Cal/OSHA), appointed by the Governor

Aug. 1, 1979 - Jan. 2, 1983
Assistant Deputy Chief for Health, California Occupational Safety and Health Administration

Feb. 1, 1979 - Aug. 1, 1979

Administrative Assistant to Chairperson of Finance Committee, Board of Supervisors, San Francisco

Jan. 1, 1976 - Feb. 1, 1979
Research Pharmacologist and Postdoctoral Fellow, Department of Pharmacology and Toxicology, School of Medicine, University of California, San Francisco

Jan. 1, 1975 - Dec. 31, 1975
Acting Assistant Professor, Department of Pharmaceutical Chemistry, University of California, San Francisco

Experience

General

Dr. Greenberg has been a consultant in Hazardous Materials Management and Security, Human and Ecological Risk Assessment, Occupational Health, Toxicology, Hazardous Waste Site Characterization, and Toxic Substances Control Policy for over 26 years. He has broad experience in the identification, evaluation and control of health and environmental hazards due to exposure to toxic substances. His experience includes Community Relations Support and Risk Communication through experience at high-profile sites and presentations at professional society meetings.

He has considerable experience in the review and evaluation of exposure via the air pathway - particularly to emissions from power plants, refineries, and diesel exhaust - and a thorough knowledge of the regulatory requirements through his experience at Cal/OSHA, the BAAQMD Hearing Board, as a consultant to the California Energy Commission, and in preparing such assessments for local government and industry. He has assessed exposures to diesel exhaust during construction and operations of stationary and mobile sources and has testified at evidentiary hearings numerous times on this subject.

He is presently assisting the California Energy Commission in assessing the risks to workers and the public of proposed power plants and LNG terminals in the state. His experience in hazard identification, exposure assessment, risk assessment, occupational safety and health, emergency response, and Critical Infrastructure Protection has made him a valuable part of the CEC team addressing this issue. He has reviewed and commented on the DEIS/DEIR for the proposed SES LNG Port of Long Beach terminal, focusing on security issues for the CEC and on safety matters for the City of Long Beach. He has presented technical information and analysis to the State of California Interagency LNG Working Group on thermal radiation public exposure criteria and safety/security at an east coast urban LNG terminal. (Both presentations are confidential owing to the nature of the material.) He has conducted numerous evaluations of the safety and hazards of natural gas pipelines for the CEC and has presented his findings and recommendations at public meetings and evidentiary hearings.

He served for over five years as the Vice-chair of the California State Water Resources Control Board Advisory Committee convened to address toxic substances in sediments in bays, rivers, and estuaries. He has been a member of the Squaw Valley Technical Review Committee since 1986 establishing chemical application management plans at golf courses to protect surface and

groundwater quality. He has also conducted numerous ecological risk assessments and characterizations, including those for marine and terrestrial habitats.

Dr. Greenberg has extensive experience in data collection and preparation of human and ecological risk assessments on numerous military bases and industrial sites with Cal/EPA DTSC and RWQCB oversight. He has also been retained to provide technical services to the Cal/EPA Department of Toxic Substances Control (preparation of human health risk assessments) and the Office of Environmental Health Hazard Assessment (review and evaluation of air toxics health risk assessments and preparation of profiles describing the acute and chronic toxicity of toxic air contaminants). He has also conducted several surveys of sites containing significant lead contamination from various sources including lead-based paint, evaluated potential occupational exposure to lead dust and fumes in industrial settings, prepared numerous human health risk assessments of lead exposure, and prepared safety and health plans for remedial investigation of lead contaminated soils. Dr. Greenberg is also a recognized expert on the requirements of California's Proposition 65 and has served as an expert on Prop. 65 litigation.

Liquefied Natural Gas (LNG)

Dr. Greenberg assisted the CEC in the preparation of the "background" report on the risks and hazards of siting LNG terminals in California ("LNG in California: History, Risks, and Siting" July 2003) and consulted for the City of Vallejo on a proposed LNG terminal and storage facility at the former Mare Island Naval Shipyard. He has also conducted an evaluation and prepared comments on the risks, hazards, and safety analysis of the DEIS/DEIR for the City of Long Beach on a proposed LNG terminal at the Port of Long Beach (POLB) and conducted an analysis on vulnerability and critical infrastructure security for the CEC on this same proposed LNG terminal. He currently advises the CEC on the POLB LNG proposal on risks, hazards, human thresholds of thermal exposure, vulnerability, security, and represented the CEC at a U.S. Coast Guard briefing on the Waterway Suitability Assessment that included the sharing of SSI (Sensitive Security Information). He has presented technical information and analysis to the State of California LNG Interagency Working Group on thermal radiation public exposure criteria and safety/security at an east coast urban LNG terminal. (Both presentations are confidential owing to the nature of the material.) He has conducted numerous evaluations of the safety and hazards of natural gas pipelines for the CEC and has presented his findings and recommendations at public meetings and evidentiary hearings.

Infrastructure Security

Since 2002, Dr. Greenberg has been trained by and is working with the Israeli company SB Security, LTD, the most experienced and tested security planning and service company in the world. Since the events of 9/11, Dr. Greenberg has been the lead person for developing vulnerability assessments and power plant security programs for the California Energy Commission (CEC). In taking the lead for this state agency, Dr. Greenberg has interfaced with the California Terrorism Information Center (CATIC) and provided analysis, recommendations, and testimony at CEC evidentiary hearings regarding the security of power plants within the state. These analyses include the assessment of Critical Infrastructure Protection, threat assessments, criticality assessments, and the preparation of vulnerability assessments and off-site consequence analyses addressing the use, storage, and transportation of hazardous materials, recommendations for security to reduce the threat from foreign and domestic terrorist activities, perimeter security, site access by personnel and vendors, personnel background checks,

management responsibilities for facility security, and employee training in security methods. Dr. Greenberg is the lead person in developing a model power plant security plan, vulnerability assessment matrix, and a security training manual for the CEC. The model security plan is used by power plants in California as guidance in developing and implementing security measures to reduce the vulnerability of California's energy infrastructure to terrorist attack. He has testified at several evidentiary hearings for the CEC on power plant security issues. He also leads an audit team conducting safety and security audits at power plants throughout California that are under the jurisdiction of the CEC. In addition to providing security expertise to the State of California, in August 2004, a team of experts led by Dr. Greenberg was awarded an 18-month contract by the State of Hawaii to update and improve the state's Energy Emergency Preparedness Plan and make recommendations for increased security of critical energy infrastructure on this isolated group of islands.

Air Pathway Analysis

Dr. Greenberg has prepared numerous Air Pathway Analyses and human health risk assessments, evaluating exposure at numerous locations in California, Hawai'i, Oregon, Minnesota, Michigan, and New York. He is experienced in working with Region IX EPA, the State of California DTSC, and the Hawai'i Department of Health Clean Air Branch in the application of both site-specific and non site-specific health risk assessment criteria.

Examples

Human Health Risk Assessment for the Open Burn/Open Detonation Operation at McCormick Selph, Inc., Hollister, Ca. (June 2003)

Air Quality and Human Health Risk Assessment for the Royal Oaks Industrial Complex, Monrovia, Ca. (January 2003)

Human Health Risk Assessment and Indoor Vapor Intrusion Assessment for the former Pt. St. George Fisheries Site, Santa Rosa, Ca. (October 2002)

Human Health Risk Assessment for the former Sargent Industries Site, Huntington Park, Ca. (July 2001)

Ballard Canyon Air Pathway Analysis and Human Health Risk Assessment, Santa Barbara County, Ca. (September 2000)

Health Risk Assessment Due to Diesel Train Engine Emissions, Oakland, Ca. (June 1999)

The Avila Beach Health Study Phase 1: Reconnaissance Sampling Findings, Conclusions, and Recommendations. (July 1997) Volume 1: Baseline Human Health Risk Assessment. (May 1998)

The Avila Beach Health Study Phase 1, Volume 2: Environmental Monitoring. (May 1998)

Health Risk Assessment and Air Pathway Analysis for the Ballard Canyon Landfill, Santa Barbara County, Ca. (March 1999)

Human Health Risk Assessment, Teledyne Ryan Aeronautical, McCormick Selph Ordnance. Hollister, California. (December 1996)

Initial Phase Human Health Risk Assessment, Teledyne Inc., San Diego, Ca. (October 1996)

Human Health Risk Assessment for Current and Proposed Expanded Class II and Class III Operations at the Altamont Sanitary Landfill, Alameda County, Ca.
(March, 1993)

Focused Ecological Risk Characterization, Hawaiian Electric Company, Keahole Generating Station Expansion, Hawai'i (June 1993)

Human Health Risk Assessment for the Proposed Palima Point Space Launch Complex, prepared for the Hawai'i Office of Space Industry (April 1993)

Ecological Risk Assessment for the Proposed Palima Point Space Launch Complex, prepared for the Hawai'i Office of Space Industry (March 1993)

Human Health Risk Assessment Due to Emissions from a Medical Waste Incinerator, prepared for Kauai Veterans Memorial Hospital, Kauai, Hawai'i (1994)

Cancer Risk Assessment for the H-Power Generating Station, Campbell Industrial Park, Oahu, Hawai'i (1988)

Hazardous Materials Assessments, Waste Management Assessments, Worker Safety and Fire Protection Assessments, and Public Health Impacts Assessments

Dr. Greenberg also has significant experience as a consultant and expert witness for the California Energy Commission providing analysis, recommendations, and testimony in the areas of hazardous materials management, process safety management, waste management, worker safety and fire protection, and public health impacts for proposed power plant/cogeneration facilities. These analyses include the evaluation and/or preparation of the following:

- Off-site consequence analyses of the handling, use, storage, and transportation of hazardous materials,
- Risk Management Plans (required by the Cal-ARP) and Business Plans (required by H&S Code section 25503.5),
- Safety Management Plans (required by 8 CCR section 5189),
- Natural gas pipeline safety,
- Solid and hazardous waste management plans,
- Phase I and II Environmental Site Assessments,
- Construction and Operations Worker Safety and Health Programs,
- Fire Prevention Programs,
- Human health risk assessment from stack emissions and from diesel engines, and
- Mitigation measures to address PM exposure, including diesel particulates

Examples

- San Francisco Energy Reliability Project, San Francisco, Ca. 2004-present. Hazardous materials management, worker safety/fire protection, waste management, public health
- Inland Empire Energy Center, Romoland, Ca. 2002-3. hazardous materials, worker safety/fire protection, waste management, public health
- Malburg Generating Station Project, City of Vernon, Ca. 2002-3. hazardous materials, worker safety/fire protection, waste management, public health
- Blythe II, Blythe, Ca. 2002-3. hazardous materials, worker safety/fire protection,
- Palomar Energy Center, Escondido, Ca. 2002-3. hazardous materials, worker safety/fire protection, waste management, public health
- Cosumnes Power Project, Rancho Seco, Ca. 2002-3. hazardous materials, worker safety/fire protection, waste management, public health
- Tesla Power Project, Tesla, Ca. 2002-3. hazardous materials, worker safety/fire protection, waste management, public health
- San Joaquin Valley Energy Center, San Joaquin, Ca. 2002-3. hazardous materials, worker safety/fire protection, waste management
- Morro Bay Power Plant, Morro Bay, Ca., 2001-2: hazardous materials, worker safety/fire protection, waste management
- Potrero Power Plant Unit 7, San Francisco, Ca., 2001-2: hazardous materials, worker safety/fire protection
- El Segundo Power Redevelopment Project, El Segundo, Ca., 2001-2: hazardous materials, worker safety/fire protection, waste management
- Rio Linda Power Project, Rio Linda, Ca., 2001-2: hazardous materials, worker safety/fire protection, waste management, public health
- Pastoria II Energy Facility Expansion, Grapevine, Ca., 2001: hazardous materials, worker safety/fire protection
- East Altamont Energy Center, Byron, Ca., 2001-2: hazardous materials, worker safety/fire protection
- Magnolia Power Project, Burbank, Ca., 2001-2: hazardous materials, worker safety/fire protection, waste management, public health
- Russell City Energy Center, Hayward, Ca., 2001-2: hazardous materials, worker safety/fire protection, waste management
- Woodbridge Power Plant, Modesto, Ca., 2001: hazardous materials, worker safety/fire protection, waste management
- Colusa Power Plant Project, Colusa County, Ca., 2001-2: hazardous materials, worker safety/fire protection, waste management, public health
- Valero Refinery Cogeneration Project, Benicia, Ca., 2001: hazardous materials, worker safety/fire protection
- Ocotillo Energy Project, Palm Springs, Ca., 2001: hazardous materials, worker safety/fire protection
- Gilroy Energy Center Phase II Project, Gilroy, Ca., 2001-2: hazardous materials, worker safety/fire protection
- Los Esteros Critical Energy Facility, San Jose, Ca., 2001-2: hazardous materials, worker safety/fire protection, waste management, public health
- Roseville Energy Facility, Roseville, Ca., 2001-2: hazardous materials, worker safety/fire protection, waste management, public health

- Spartan Power, San Jose, Ca., 2001-2: hazardous materials, worker safety/fire protection, waste management, public health
- Inland Empire Energy Center, Romoland, Ca., 2001-2: hazardous materials, worker safety/fire protection, waste management, public health
- South Star Cogeneration Project, Taft, Ca., 2001-2: hazardous materials, worker safety/fire protection, waste management, public health
- Tesla Power Plant, Eastern Alameda County, Ca., 2001-2: hazardous materials, worker safety/fire protection, waste management, public health
- Tracy Peaker Project, Tracy, Ca., 2001-2: hazardous materials, worker safety/fire protection, waste management, public health
- Henrietta Peaker Project, Kings County, Ca., 2001: hazardous materials, worker safety/fire protection, waste management, public health
- Central Valley Energy Center, San Joaquin, Ca., 2001-2: hazardous materials, worker safety/fire protection, waste management, public health
- Cosumnes Power Plant, Rancho Seco, Ca., 2001-2: hazardous materials, worker safety/fire protection, waste management, public health
- Los Banos Voltage Support Facility, Western Merced County, Ca., 2001-2: waste management, public health
- Palomar Energy Project, Escondido, Ca., 2001-2: hazardous materials, worker safety/fire protection, waste management, public health
- Metcalf Energy Center, San Jose, Ca., 2000-1: hazardous materials
- Blythe Power Plant, Blythe, Ca., 2000-1: hazardous materials
- San Francisco Energy Co. Cogeneration Project, San Francisco, Ca., 1994-5: hazardous materials
- Campbell Soup Cogeneration Project, Sacramento, Ca., 1994: hazardous materials
- Proctor and Gamble Cogeneration Project, Sacramento, Ca., 1993-4: hazardous materials
- San Diego Gas and Electric South Bay Project, Chula Vista, Ca., 1993: hazardous materials
- SEPCO Project, Rio Linda, Ca., 1993: hazardous materials
- Shell Martinez Manufacturing Complex Cogeneration Project, Martinez, Ca., 1993: hazardous materials and review and evaluation of EIR
- SFERP Project, San Francisco, Ca. 2004 – 2006. hazardous materials, worker safety/fire protection, waste management, public health

Occupational Safety and Health/Health and Safety Plans/Indoor Air Quality

Dr. Greenberg has significant experience in occupational safety and health, having directed the development, adoption, and implementation of over 50 different Cal/OSHA regulations, including airborne contaminants (>450 substances), lead, asbestos, confined spaces, and worker-right-to-know (MSDSs). He has conducted numerous occupational health surveys and has extensive experience in the sampling and analysis of indoor air quality at residences, workplaces, and school classrooms. He is currently the team leader conducting safety and security audits at power plants throughout California for the California Energy Commission. Safety issues audited include compliance with regulations addressing several safety matters, including but not limited to, confined spaces, lockout/tagout, hazardous materials, and fire prevention/suppression equipment.

Examples

Review and Evaluation of Public and Worker Safety Issues at the proposed SES LNG Facility, Port of Long Beach. prepared for the City of Long Beach. (November 2005)

Confidential safety and security audit reports for 18 power plants in California. prepared for the California Energy Commission. (January 2005 through March 2006)

Report on the Accidental release and Worker Exposure to Anhydrous Ammonia at the BEP I Power Plant, Blythe, Ca. prepared for the California Energy Commission. (October 2004)

Investigation of a Worker Death in a Confined Space, La Paloma Power plant. prepared for the California Energy Commission. (July 2004)

Preliminary Report on Indoor Air Quality in Elementary School Portable Classrooms, Marin County, Ca. (December 1999)

Health Risk Assessment Due to Diesel Train Engine Emissions, Oakland, Ca. (June 1999)

Air Pathway Analysis for the Ballard Canyon Landfill. Submitted to the County of Santa Barbara, (March 1999)

Review and Evaluation of the Health Risk Assessment for Outdoor and Indoor Exposures at the Former Golden Eagle Refinery Site, Carson, Ca. (May 1998)

The Avila Beach Health Study Phase 1: Reconnaissance Sampling Findings, Conclusions, and Recommendations. (July 1997) Volume 1: Baseline Human Health Risk Assessment. (May 1998)

The Avila Beach Health Study Phase 1, Volume 2: Environmental Monitoring. (May 1998)

Phase 2 Human Health Risk Assessment, Teledyne Inc., San Diego, Ca. (February 1997)

Determination of Occupational Lead Exposure at a Tire Shop in Placerville, Ca. (April 1993)

Development of an Environmental Code of Regulations for Hazardous Waste Treatment Facilities on La Posta Indian Tribal lands, San Diego County, Ca. (August 1992)

Sampling and Analysis Plan, Health and Safety Plan, Site Characterization of Lead Oxide Contaminated Areas, Mare Island Naval Shipyard, Vallejo, California. Prepared in conjunction with Kaman Sciences Corp. (September 2, 1988)

Sites with RWQCB and/or DTSC Oversight

Dr. Greenberg has specific experience in assessing human health and ecological risks at contaminated sites at the land/water interface, including petroleum contaminants, metals, mercury, and VOCs at several locations in California including Oxnard, Richmond, Avila Beach, Mare Island Naval Shipyard, San Diego, Hollister, San Francisco, Hayward, Richmond, the Port of San Francisco, and numerous other locations. He has used Cal/EPA methods, US EPA

methods, and ASTM Risk Based Corrective Action (RBCA) and Cal/Tox methodologies. He is extremely knowledgeable about SWRCB and SF Bay RWQCB regulations on underground storage tank sites and with ecological issues presented by contaminated sediments including sediment analysis, toxicity testing, tissue analysis, and sediment quality objectives. Dr. Greenberg served on the State Water Resources Control Board Bay Protection and Toxic Cleanup Program Advisory Committee from 1994 until the end of the program in 1999.

Dr. Greenberg experience on many of these contaminated sites has been as a consultant to local governments, state agencies, and citizen groups. He assisted the City and County of San Francisco in developing local ordinance requiring soil testing (Article 20, Maher ordinance) and hazardous materials use reporting (Article 21, Walker ordinance). He served as the City of San Rafael's consultant to provide independent review and evaluation of the site characterization and remedial action plan prepared for a former coal gasification site. He was a consultant to a citizen group in northern California regarding exposure and risks due to accidental releases from a petroleum refinery and assisted in the assessment of risks due to crude petroleum contamination of a southern California beach. He has prepared a number of risk assessments addressing crude petroleum, diesel and gasoline contamination, including coordinating site investigations, environmental monitoring, and health risk assessment for the County of San Luis Obispo regarding Avila Beach subsurface petroleum contamination. That high-profile project lasted for over one year and Dr. Greenberg managed a team of experts with a budget of $750,000. Another high-profile project included the preparation of an extensive comprehensive human and ecological risk assessment for the Hawaii Office of Space Industry on rocket launch impacts and transportation/storage of rocket fuels at the southern end of the Big Island of Hawaii. Dr. Greenberg's risk assessments were part of the EIS for the project. Dr. Greenberg also worked on another high-profile project conducting Air Pathway Analysis of off-site and on-site impacts from landfill gas constituents, including indoor and outdoor air measurements, air dispersion modeling, flux chamber investigations, and health risk assessment for the County of Santa Barbara. Dr. Greenberg has conducted RI/FS work, prepared health risk assessments, evaluated hazardous waste sites and hazardous materials use at numerous locations in California, Hawaii, Oregon, Minnesota, Michigan, and New York. He has considerable experience in the development of clean-up standards and the development of quantitative risk assessments for site RI/FS work at CERCLA sites, as well as site closures, involving toxic substances and petroleum hydrocarbon wastes. He is experienced in working with both Region IX EPA and the State of California DTSC in negotiating clean-up standards based on the application of both site-specific and non site-specific health and ecological based clean-up criteria. He has significant experience in the development of site chemicals of concern list, quantitative data quality levels, site remedial design, the site closure process, the design and execution of data quality programs and verification of data quality prior to its use in the decision making process on large NPL sites.

Examples

The Avila Beach Health Study Phase 1: Reconnaissance Sampling Findings, Conclusions, and Recommendations. (July 1997) Volume 1: Baseline Human Health Risk Assessment. (May 1998)
The Avila Beach Health Study Phase 1, Volume 2: Environmental Monitoring. (May 1998)

Health Risk Assessment and Air Pathway Analysis for the Ballard Canyon Landfill, Santa Barbara County, Ca. (March 1999)

Screening Human Health Risk Assessment, Calculation of Soil Clean-up Levels, and Aquatic Ecological Screening Evaluation, Galilee Harbor, Sausalito, Ca. (May 1998)

Health Risk Assessment Due to Diesel Train Engine Emissions, Oakland, Ca. (June 1999)

Health Risk Assessment for Residual Mercury at the Deer Creek Facility, 3475 Deer Creek Road, Palo Alto, California. (July 1997)

Phase 2 Human Health Risk Assessment, Teledyne Inc., San Diego, Ca. (February 1997)

Human Health Risk Assessment, Teledyne Ryan Aeronautical, McCormick Selph Ordnance. Hollister, California. (December 1996)

Initial Phase Human Health Risk Assessment, Teledyne Inc., San Diego, Ca. (October 1996)

Human Health Risk Assessment, Ecological Screening Evaluation, and Development of Proposed Remediation Goals for the Flair Custom Cleaners Site, Chico, California (January 1996)

Human Health Risk Assessment for the X-3 Extrudate Project at Criterion Catalyst, Pittsburg, Ca. (November 1994)

Screening Health Risk Assessment and Development of Proposed Soil Remediation Levels at Hercules Plant #3, Culver City, Ca. (July 1993)

Ecological Screening Evaluation for the Altamont Landfill, Alameda County, Ca. (June, 1993)

Focused Ecological Risk Characterization, Hawaiian Electric Company, Keahole Generating Station Expansion, Hawaii (June 1993)

Human Health Risk Assessment for the Proposed Palima Point Space Launch Complex, prepared for the Hawaii Office of Space Industry (April 1993)

Ecological Risk Assessment for the Proposed Palima Point Space Launch Complex, prepared for the Hawaii Office of Space Industry (March 1993)

Human Health Risk Assessment for Current and Proposed Expanded Class II and Class III Operations at the Altamont Sanitary Landfill, Alameda County, Ca.
(March, 1993)

Screening Health Risk Assessment for the Proposed Expansion of the West Marin Sanitary Landfill, Point Reyes Station, Ca.
(March, 1993)

Health Risk Assessment for the Proposed Expansion of the Forward, Inc. Landfill, Stockton, Ca. (September 14, 1992)

Health Risk Assessment for the Rincon Point Park Project, San Francisco, Ca. Prepared for Baseline Environmental Consulting and the San Francisco Redevelopment Agency. (August 10, 1992)

Health Risk Assessment for the South Beach Park Project, San Francisco, Ca. Prepared for Baseline Environmental Consulting and the San Francisco Redevelopment Agency. (August 10, 1992)

Screening Health Risk Assessment and Development of Proposed Soil and Groundwater Remediation Levels, Kaiser Sand and Gravel, Mountain View, Ca. Prepared for Baseline Environmental Consulting (January 30, 1992)

Development of Proposed Soil Remediation Levels for the Marine Corps Air-Ground Combat Center, 29 Palms, California (May 30, 1991)

Preliminary Health Risk Assessment for the City of Pittsburg Redevelopment Agency, Pittsburg, California (May 29, 1991)

Military Bases

Dr. Greenberg has experience in conducting assessments at DOD facilities, including RI/FS work, preparation of health risk assessments, evaluation of hazardous waste sites and hazardous materials use at the following Navy sites in California: San Diego Naval Base; Marine Corps Air-Ground Combat Center, 29 Palms; Mare Island Naval Shipyard, Vallejo; Treasure Island Naval Station, San Francisco, Hunters Point Naval Shipyard, San Francisco, and the Marine Corps Logistics Base, Barstow. He worked with the U.S. Navy and the U.S. EPA in the implementation of Data Quality Objectives (DQO's) at MCLB, Barstow.

Examples

Review and Evaluation of the Remedial Investigation Report and Human Health Risk Assessment for the U. S. Naval Station at Treasure Island, Ca. (June 1999)

Screening Health Risk Assessment for the Proposed San Francisco Police Department's Helicopter Landing Pad at Hunters Point Shipyard, San Francisco, Ca. (September 1997)

Development of Proposed Soil Remediation Levels for the Marine Corps Air-Ground Combat Center, 29 Palms, California (May 30, 1991)

Health Risk Assessment for the Chrome Plating Facility, Mare Island Naval Shipyard, Vallejo, California (October 24, 1988)

Background Levels and Health Risk Assessment of Trace Metals present at the Naval Petroleum Reserve No.1, 27R Waste Disposal Trench Area, Lost Hills, California (August 12, 1988)

RCRA Facility Investigation (RFI) Work Plan of Lead Oxide Contaminated Areas, Mare Island Naval Shipyard, Vallejo, California. Prepared in conjunction with Kaman Sciences Corp. (August 14, 1989)

Hazardous Waste and Solid Waste Audit and Management Plan, Mare Island Naval Shipyard, Vallejo, California. Prepared in conjunction with Kaman Sciences Corp. (July 3, 1989)

Water Quality Solid Waste Assessment Test (SWAT) Proposal RCRA Landfill, Mare Island Naval Shipyard, Vallejo, California. Prepared in conjunction with Kaman Sciences Corp. (October 31, 1988)

Waste Disposal Facilities, Waste Haulers, Waste Recycling Facilities Report, Mare Island Naval Shipyard, Vallejo, California. Prepared in conjunction with Kaman Sciences Corp. (September 22, 1988)

Sampling and Analysis Plan, Health and Safety Plan, Site Characterization of Lead Oxide Contaminated Areas, Mare Island Naval Shipyard, Vallejo, California. Prepared in conjunction with Kaman Sciences Corp. (September 2, 1988)

Air Quality Solid Waste Assessment Test (SWAT) Proposal, Mare Island Naval Shipyard, Vallejo, California. Prepared in conjunction with Kaman Sciences Corp. (August 25, 1988)

Mercury Contamination

Dr. Greenberg has prepared and/or reviewed several human health and ecological risk assessments regarding mercury contamination in soils, sediments, and indoor surfaces. Dr. Greenberg served on the State Water Resources Control Board Bay Protection and Toxic Cleanup Program Advisory Committee from 1994 until the end of the program in 1999.

Examples

Review and evaluation of a human health risk assessment of ingestion of sport fish caught from San Diego Bay and which contain tissue levels of mercury and PCBs (November 2004 – present)

Screening Human Health Risk Assessment, Calculation of Soil Clean-up Levels, and Aquatic Ecological Screening Evaluation, Galilee Harbor, Sausalito, Ca. (May 1998)

Health Risk Assessment for Residual Mercury at the Deer Creek Facility, 3475 Deer Creek Road, Palo Alto, California. (July 1997)

Human Health Risk Assessment Due to Emissions from a Medical Waste Incinerator, prepared for Kauai Veterans Memorial Hospital, Kauai, Hawai'i (1994)

DECLARATION OF
Rick Tyler

I, Rick Tyler declare as follows:

1. I am presently employed by the California Energy Commission in the Facilities Siting Office of the Energy Facilities Siting Division as a Senior Mechanical Engineer.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony for the Orange Grove Project based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 11/4/08 Signed: _____

At: Sacramento, California

RICK TYLER

Associate Mechanical Engineer

CALIFORNIA ENERGY COMMISSION

EDUCATION B.S., Mechanical Engineering, California State University, Sacramento. Extra course work in Statistics, Instrumentation, Technical Writing, Management; Toxicology, Risk Assessment, Environmental Chemistry, Hazardous Materials Management, Noise Measurement, and regulations regarding control of toxic substances.

Near completion of course work necessary to obtain a certificate in hazardous materials management from University of California, Davis.

EXPERIENCE

Jan. 1998-Present

California Energy Commission - Senior Mechanical Engineer
Energy Facility Siting and Environmental Protection Division

Responsible for review of Applications for Certification (applications for permitting) for large power plants including the review of handling practices associated with the use of hazardous and acutely hazardous materials, loss prevention, safety management practices, design of engineered equipment and safety systems associated with equipment involving hazardous materials use, evaluation of the potential for impacts associated with accidental releases and preparation and presentation of expert witness testimony and conditions of certification. Review of compliance submittals regarding conditions of certifications for hazardous materials handling, including Risk Management Plans Process Safety Management.

April 1985-Jan. 1998

California Energy Commission - Health and Safety
Program Specialist; Energy Facility Siting and Environmental Protection Division.

Responsible for review of Public Health Risk Assessments, air quality, noise, industrial safety, and hazardous materials handling of Environmental Impact Reports on large power generating and waste to energy facilities, evaluation of health effects data related to toxic substances, development of recommendations regarding safe levels of exposure, effectiveness of measures to control criteria and non-criteria pollutants, emission factors, multimedia exposure models. Preparation of testimony providing Staff's position regarding public health, noise, industrial safety, hazardous materials handling, and air quality issues associated with proposed power plants. Advise Commissioners, Management, other Staff and the public regarding issues related to health risk assessment of hazardous materials handling.

Nov. 1977-
April 1985

California Air Resources Board - Engineer (last 4 years Associate level)

Responsible for testing to determine pollution emission levels at major industrial facilities; including planning, supervision of field personnel, report preparation and case development for litigation; evaluate, select and acceptance-test instruments prior to purchase; design of instrumentation systems and oversight of their repair and maintenance; conduct inspections of industrial facilities to determine compliance with applicable pollution control regulations; improved quality assurance measures; selected and programmed a computer system to automate data collection and reduction; developed regulatory procedures and the instrument system necessary to certify and audit independent testing companies; prepared regulatory proposals and other presentations to classes at professional symposia and directly to the Air Resources Board at public hearings. As state representative, coordinated efforts with federal, local, and industrial representatives.

PROFESSIONAL AFFILIATIONS/ LICENSES

Past President, Professional Engineers in California Government Fort Sutter Section;
Past Chairman, Legislative Committee for Professional Association of Air Quality Specialists. Have passed the Engineer in Training exam.

PUBLICATIONS, PROFESSIONAL PRESINTATIONS AND ACCOMPLISHMENTS

Authored staff reports published by the California Air Resources Board and presented papers regarding continuous emission monitoring at symposiums.

Authored a paper entitled "A Comprehensive Approach to Health Risk Assessment", presented at the New York Conference on Solid Waste Management and Materials Policy.

Authored a paper entitled "Risk Assessment A Tool For Decision Makers" at the Association of Environmental Professionals AEP Conference on Public Policy and Environmental Challenges.

Conducted a seminar at University of California, Los Angeles for the Doctoral programs in Environmental Science and Public Health on the subject of "Health Risk Assessment".

Authored a paper entitled "Uncertainty Analysis -An Essential Component of Health Risk Assessment and Risk Management" presented at the EPA/ORNL expert workshop on Risk Assessment for Municipal Waste Combustion: Deposition, Uncertainty, and Research Needs.

Presented a talk on off-site consequence analysis for extremely hazardous materials releases. Presented at the workshop for administering agencies conducted by the City of Los Angeles Fire Department.

Evaluated, provided analysis and testimony regarding public health and hazardous materials management issues associated with the permitting of more than 20 major power plants throughout California.

Developed Departmental policy, prepared policy documents, regulations, staff instruction, and other guidance documents and reference materials for use in evaluation of public health and hazardous materials management aspects of proposed power plants.

Project Manager on contracts totaling more than $500,000.

RES.RT

DECLARATION OF
Robert Fiore

I, Robert Fiore, declare as follows:

1. I am presently employed by the California Energy Commission in the Facilities Siting Office of the Energy Facilities Siting Division as a Planner II.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony for the Orange Grove Project based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 11/4/08 Signed: Robert Fiore

At: Sacramento, California

Robert Fiore

OBJECTIVE: PLANNING/ ENVIRONMENTAL PLANNING/ MILITARY PLANNING

EMPLOYMENT HISTORY

Oct. 2004 - March 2008	Aug. 2002 - Oct. 2004	June 1998 – Aug. 2002	Jan. 1990 – Jan. 1998
Senior Forward Planner	**Planning Project Manager**	**Planner/ Financial Analyst**	**Principal Regional Planner**
Frayji Design Group, Inc.	R&B Engineering	Berryman & Henigar	Los Angeles County
Roseville, CA 95678	Auburn CA 95603	Pleasanton, CA 94588	Los Angeles, CA 90012

QUALIFICATIONS

Senior Forward Planner and Project Manager:

Projects;

- AG Spanos' Atlas Tract, a 5,000 unit age-restricted residential project with significant levy infrastructure design, planning and permitting;
- Lincoln Crossing & Marketplace, a 2,900 d/u community featuring a commercial power center, nature preserves, and other recreational amenities;
- Village-1 Specific Plan, a 1,800 acre sustainable concept village planned for 3,500 dwelling units, mixed use urban core and institute new urban principles;
- Bickford Ranch Specific Plan, a 2,000 d/u Hillside Master Planned Community;
- Ceronix Gaming Business Park, a 1.5 million sq. ft. industrial complex;
- Stone Point Center, five building office complex;

Responsibilities;

- Assemble and lead interdisciplinary project teams consisting of planners, engineers, architects, consultants and technicians to develop large-scale master planned communities;
- Direct projects from pre-acquisition, through site assessment and project approval, to construction by coordinating external and internal acquisition, planning, design and construction departments or consultants; Due diligence and site assessments;
- Analyze environmental effects and impacts of infrastructure systems
- Calculate development costs and manage multi-million dollar project budgets;
- Solve problems related to site and infrastructure design, soils, traffic, environmental impacts, utility placement, housing, recreation, architecture, landscaping, rights-of-way, etc;
- Perform policy analyses and revamp policies and procedures;
- Establishing, monitor and track contracts, budgets and schedules; Create useful action plans to ensure project buildout;
- Business development, marketing and client servicing; Invoicing and contract closeout;
- Hire, train and direct staff; Integrate technology to improve production and product;
- Establish schedules and budgets and prepare and review proposals and RFP's;
- Facilitate and foster public and governmental relations;
- Negotiate agreements with government and quasi-governmental agencies;
- Establish basis for matters like proper land use distribution, accessibility and aesthetics;
- Prepare environmental assessments and documentation in compliance with NEPA/ CEQA;
- Obtain Clean Water (404) and Endangered Species (1601) permits, Water Quality Certifications and other similar approvals; Wetland mitigation;
- Process entitlements and propose strategies to resolve complex issues;
- Day to day management of complex and controversial siting of infrastructure and facilities;

Planner- Financial Analyst:

Projects;

- USCG MLC PAC Planning Proposals and Facility Master Plans (USCG Stations Neah Bay, Vallejo and Morro Bay and the USCG Concord/ Novato Housing Study and Master Plan);
- Managed the formation of assessment districts and administered the East Bay Regional Parks Assessment District, San Joaquin Area Flood Control Agency Assessment District, Livermore Community Facilities District, developer initiated Mello-Roos and Landscape and Lighting

Districts and other similar special tax districts; Also, performed infrastructure planning and permitting;
- City limits expansion and infrastructure feasibility analysis for Murrieta, CA
- CALPINE generation and transmission expansion, planning and permitting;
- Contra Costa County Sewer Mainline replacement and expansion;

Responsibilities;
- Facility assessments and survey, total ownership costs, life cycle costs, alternatives evaluation and recommendations;
- Promote and gain support for multi-million dollar bonds and assessments;
- Calculate costs/ apportionments and integrate databases;
- Ensure Federal, State and Local regulatory compliance;
- Perform trend analysis and forecasting, socio-economic data research, needs assessments, fiscal studies, infrastructure inventory analysis, fee studies and feasibility studies;
- Prepare and present reports and position papers for Military and Congressional Staff, County Supervisors and City Councils;

Principal Regional Planner:

Projects;
- Stevenson Ranch Specific Plan, a multi-use master planned community that included freeway interchanges and highway serving commercial projects, "big-box" and neighborhood commercial centers, several thousand homes split among large lot communities;
- Calabasas Hills, a 500 unit master planned community with wildlife corridor;
- Malibu Terrace, an upscale coastal community;
- Newhall Ranch, new urban concept, integrate social interests to master planned communities;
- Individual residences in view sheds and parcel maps in coastal areas;
- Many subdivisions, zone changes, conditional use permits, environmental review, etc.
- Redevelopment near existing incorporated cities;
- Major public infrastructure projects – Highway 101 Bridge and ROW expansion;

Responsibilities
- Oversee the proper development of large-scale and multi-use development projects;
- Initiate and/ or oversee policy document development and prepare and interpret ordinances;
- Make presentations, manage meetings and engage community, staff and stakeholders to gain consensus;
- Increase reliability through planning and proper presentation preparation;
- Experienced public and media relations;
- Problem solve through sound reason, judgment and expertise;
- Manage department budget and assign tasks; Hire and train junior staff and enable junior staff to meet goals; Ensure production and accountability;
- Prepare policy analyses and recommendations for action, plans, and budget proposals
- Capital improvement, aviation and emergency planning;
- Manage specific plan, land development regulation and design guideline preparation;
- Manage and/ or prepare reports analyzing impacts from development projects and ensure compliance with CEQA and NEPA and the CA Map Act;
- Assess environment and public facilities impacts associated with development and report findings to make recommendations; Prepare and present reports to the RPC & Supervisors;
- Traffic studies, biological reports, cultural and historic reports and site and architectural design
- Wrote elements of the County's General Plan, Zoning Regulations and Development Standards; Wrote portions of EIR's and EIS's;
- Perform traffic analysis of transportation models to maximize routing efficiency and reduce expenditures; Analyzed traffic studies to calculate cost participation for traffic system and control improvements; Acquire property and ROW through negotiations, eminent domain and condemnation;
- Expedite and track entitlements, improvement plans and final maps;

DECLARATION OF
SHAHAB KHOSHMASHRAB

I, **SHAHAB KHOSHMASHRAB**, declare as follows:

1. I am presently employed by the California Energy Commission in the **ENGINEERING OFFICE** of the Facilities Siting Division as a **MECHANICAL ENGINEER**.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I participated in the preparation of the staff testimony on **NOISE AND VIBRATION**, for the **Orange Grove Project** based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: October 29, 2008 Signed: [signature]

At: Sacramento, California

Shahab Khoshmashrab
Mechanical Engineer

Experience Summary

Nine years experience in the Mechanical, Civil, Structural, and Manufacturing Engineering fields involving engineering and manufacturing of various mechanical components and building structures. This experience includes QA/QC, construction/licensing of electric generating power plants, analysis of noise pollution, and engineering and policy analysis of thermal power plant regulatory issues.

Education

- California State University, Sacramento-- Bachelor of Science, Mechanical Engineering
- Registered Professional Engineer (Mechanical), California

Professional Experience

2001-2004--Mechanical Engineer, Systems Assessment and Facilities Siting– California Energy Commission

Performed analysis of generating capacity, reliability, efficiency, noise and vibration, and the mechanical, civil/structural and geotechnical engineering aspects of power plant siting cases.

1998-2001--Structural Engineer – Rankin & Rankin

Engineered concrete foundations, structural steel and sheet metal of various building structures including energy related structures such as fuel islands. Performed energy analysis/calculations of such structures and produced structural engineering detail drawings.

1995-1998--Manufacturing Engineer – Carpenter Advanced Technologies

Managed manufacturing projects of various mechanical components used in high tech medical and engineering equipment. Directed fabrication and inspection of first articles. Wrote and implemented QA/QC procedures and occupational safety procedures. Conducted developmental research of the most advanced manufacturing machines and processes including writing of formal reports. Developed project cost analysis. Developed/improved manufacturing processes.

DECLARATION OF
Amanda Stennick

I, **Amanda Stennick** declare as follows:

1. I am presently employed by the California Energy Commission in the Facilities Siting Office of the Energy Facilities Siting Division as a Planner II.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on Socioeconomic Resources for the Orange Grove Energy Project based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: October 28, 2008 Signed: Amanda Stennick

At: Sacramento, California

AMANDA STENNICK

EDUCATION

B.A. 1986 University of California, Davis, Urban and Economic Geography

WORK EXPERIENCE

April 1998 present **Planner II.** California Energy Commission, Energy Facilities Siting and Protection Division.

Provide technical analysis of proposed energy planning, conservation, and development programs on land use and socioeconomic resources. Specific tasks include the analysis of potential land use and socioeconomic impacts, identification of mitigation measures, presentation of oral and written testimony for hearings on siting cases, and project monitoring to ensure compliance with local, state and federal environmental laws and regulations. Recent work includes preparation of agenda and other materials for staff's environmental justice training seminar; research in the areas of demographics and poverty for environmental justice in siting cases; review of environmental justice legislation; research on energy and environmental justice issues specific to US/Mexico Border; as part of a team, authored the 2000 Quality Control Responsibilities for Division Products; authored the Environmental Justice sections for the 2001, 2003, and 2005 Environmental Performance Report; technical lead for land use section for 2005 Environmental Performance Report; CEQA review and comment on Cabrillo LNG Deepwater Port Facility NOI/NOP, City of Pittsburg Trans Bay Cable Project, and EIS/EIR for LNG facility in the Port of Long Beach.

Oct. 1993 to April 1998 **Planner I.** California Energy Commission, Energy Facilities Siting and Protection Division.

Provide technical analysis of proposed energy planning, conservation, and development programs on land use and socioeconomic resources. Specific tasks include the analysis of potential impacts, identification of mitigation measures, presentation of oral and written testimony for public hearings on siting cases, and project monitoring to ensure compliance with local, state and federal environmental laws and regulations. Other work includes participation in the environmental justice task force; preparation of environmental justice white paper presented to Commissioners; research and preparation of discussion on discount rates and net present value for the SFEC siting project; preparation of socioeconomic section on 1996 Quincy Library Group Report; preparation of forestry section on 1997 CEC Global Climate Change Report; demographic research for environmental justice issues in siting cases.

1992 to 1993 **Project Manager/Environmental Analyst/Planner.** Beak Consultants.

Environmental Planner for EIR/EA for the Mammoth County Water District. Analyzed potential impacts resulting from lake water transfers and maintenance of in-stream flows in the Mammoth Lakes Basin; prepared land use, socioeconomics, recreation, and public services and utilities sections of EIR/EA; provided team project management.

Environmental Planner for an Effluent Treatment Plant EIR for Simpson Paper Company in Humboldt County. Authored land use, socioeconomics, recreation, public services and utilities, cumulative impacts sections, and mitigation monitoring; provided team project management.

Environmental Planner for Folsom/SAFCA Reoperation. Work involved determining parameters of project description with respect to water modeling, project geographic boundaries, and agency jurisdictional boundaries; ensured compliance with federal, state, and local plans and policies; provided team project management.

1990 to 1992 **Environmental Analyst/Project Manager.** ECOS. Inc.

Project Manager/Planner. EIR for a Planned Development, General Plan Amendment, and rezone request for a 504-acre Business and Industrial Park expansion for the Port of Sacramento. Prepared work scope and budget for Public Improvements Plan and Specific Plan for an 80-acre Mixed Use/Water Related development, including a Mitigation Monitoring Plan and Statement of Overriding Considerations for the City of West Sacramento. Specific tasks included coordination with subcontractors on technical sections of EIR, meetings with Assistant Port Director and City staff to present Public Improvements Plan, Specific Plan, tentative parcel map, and critical project phasing; and discussion with CDFG and Port staff on regional approach to mitigation for project-impacted endangered species.

Project Manager/ Planner. EIR for the Wildhorse Residential/Recreational Planned Development for the City of Davis. Specific tasks included CEQA compliance, writing technical sections on land use, project alternatives, and cumulative impacts, and determining appropriate project alternatives based on traffic models and allowable housing densities.

Project Manager. Yolo County Powerline Ordinance. Project tasks included developing siting policies and mitigation measures for placement of powerlines and substations in Yolo County.

1989 to 1990 **Assistant Planner.** Sacramento County Planning Department.

Principal Author. Energy Component of the Public Services and Facilities Element of the Sacramento County General Plan. Coordinated work efforts with the CEC, SMUD, and PG&E to develop environmental and siting policies for energy facilities and transmission lines; identified environmental impacts and appropriate mitigation measures.

1987 to 1989 **Planner/Assistant Planner.** Yolo County Community Development

Planning liaison for Homestake Mining Company's McLaughlin Mine. Conducted meetings on the Technical Review Panel's environmental monitoring of HMC's McLaughlin Mine; prepared staff reports on the implementation of use permit phasing on water quality and impacts of the tailings pond on biologic resources; organized site visits to monitor the revegetation plan and other mitigation measures as specified in the use permit; presented oral and written staff reports to the Planning Commission.

1988 **Consultant.** Pan Pacific Energy Development Corporation.

Consulting job to develop a regional energy plan for rural areas of developing countries including decentralized non-fossil fuel power plants in agricultural regions. Attended IREC and AWEA International Conference in Honolulu.

PROFESSIONAL AND CONTINUING EDUCATION

1988	California Environmental Quality Act (UC Davis)
1989	Subdivision Map Act (UC Davis)
1991	Fiscal Impact Analysis (UC Davis)
1994	APA Conference (San Francisco)
1994	Environmental Justice Conference (UC Berkeley)
1998	California Environmental Quality Act (California Energy Commission)
1999	Roundtable on Environmental Justice US/Mexico Border
2000	Local Agency Formation Commission - LAFCO (UC Davis)
2005	Geographic Information System – GIS (UC Davis)
2006	Mapping Your Community GIS and Community Analysis (Sacramento, CA)

PROFESSIONAL AFFILIATIONS

Association of Environmental Professionals
American Planning Association

DECLARATION OF
Cheryl Closson

I, Cheryl Closson, declare as follows:

1. I am presently employed by the California Energy Commission in the Environmental Protection Office of the Siting, Transmission and Environmental Protection Division as an Engineering Geologist.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Soil and Water Resources** for the Orange Grove Project based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: November 4, 2008 Signed: Cheryl Closson

At: Sacramento, California

Cheryl Closson, P.G.

Education:

B.A., Earth Science, 1982
University of California, Berkeley

Professional Licensure:

California Professional Geologist #6651

Professional Experience:

Ms. Closson has over 20 years of experience in energy/mineral resource assessment and environmental regulation, including experience in performance of technical evaluations, project management, policy and standards development, and regulatory compliance. Ms. Closson's breadth of experience provides her with a comprehensive, multi-media perspective and understanding of waste and water technical issues and regulatory concerns.

2007 to Present – Engineering Geologist (Range D),
California Energy Commission

Perform technical evaluations of the waste management, soil and water elements of power plant applications for certification. These evaluations include technical assessments of the potential environmental impacts associated with construction and operation of proposed facilities, as well as evaluation of the proposed project's compliance with applicable federal, state, and local laws, ordinances, regulations, and standards (LORS), and Energy Commission policies.

2006 to 2007 – Hazardous Substances Scientist,
Department of Toxic Substances Control

Provided technical reviews and regulatory guidance to industrial waste generators and the general public on hazardous waste source reduction and pollution prevention; developed guidance and outreach documents to facilitate and promote pollution prevention.

2005 to 2006 – Engineering Geologist (Range D),
Office of Mine Reclamation, Department of Conservation

Conducted technical reviews of plans and cost estimates for reclamation of surface mines in accordance with the Surface Mining and Reclamation Act (SMARA); performed mine site inspections and responded to complaints about mining activities; and developed training workshops for lead agencies, miners, and the public on SMARA-related laws and requirements.

1997 to 2005 – Hazardous Substances Scientist,
Department of Toxic Substances Control

Provided regulatory assessments and guidance to waste generators on a variety of hazardous waste management issues. Developed regulations for the management of hazardous waste and provided analyses of waste-related legislative proposals; developed and delivered training classes and wrote factsheets/guidance documents on management of hazardous wastes; and participated in hazardous waste-related investigations and enforcement efforts.

1991 to 1996 – Associate Engineering Geologist,
State Water Resources Control Board

Conducted technical reviews of water quality planning projects, draft Waste Discharge Requirements and National Pollutant Discharge Elimination System (NPDES) permits, and

petitions to the State Board for review of Regional Board decisions. Staff lead and coordinator for both the Cal/EPA oil and gas exploration and production (E & P) regulatory review and the State Board's participation in the Interstate Oil and Gas Compact Commission review of California oil and gas E & P waste management regulatory programs. Prepared analyses of water-related legislative actions and provided regulatory compliance information to dischargers and the general public.

1990 to 1991 – Associate Waste Management Specialist,
California Integrated Waste Management Board

Performed detailed reviews of closure and postclosure maintenance plans for solid waste disposal facilities. Reviews included technical evaluation of the placement of the facility and the appropriateness of mitigation/control features with respect to geologic and hydrologic conditions at the site. Reviewed local agency solid waste disposal plans; prepared Board agenda items, including staff analyses and recommendations; and made presentations to the Board at public hearings and meetings.

1987 to 1990 – Energy Specialist I,
California Energy Commission

Managed geothermal resource assessment and exploratory drilling projects funded by the Energy Commission. Worked with applicants, consultants and resource agencies to design/develop project parameters and conducted technical reviews of products developed. Work included critically evaluating the project geologic environment and technology requirements, and developing a project budget consistent with the available funding, technical requirements, and successful completion of project goals.

1986 to 1987 – Geologist,
I-Chem Research

Performed surface and ground water sampling and monitoring of selenium contamination at Kesterson Reservoir for the U.S. Bureau of Reclamation. Work included implementing quality assurance/quality control measures for all sampling efforts, performing chemical analyses in the field, and conducting chemical analyses in the laboratory of samples collected in the field.

1985 to 1986 – Geologist,
United States Bureau of Reclamation

Conducted field sampling and laboratory studies of soil and water to identify conditions and potential sources of pollution impacting federal reservoirs and canals.

1982 to 1984 – Physical Science Technician/Geological Field Assistant,
United States Geological Survey

Performed geologic field mapping and sampling at various locations in California and Washington states; conducted laboratory tests on rock samples collected in the field; and compiled, constructed, and drafted geologic maps, charts, and diagrams.

DECLARATION OF
James Adams

I, James Adams declare as follows:

1. I am presently employed by the California Energy Commission in the Environmental Office of the Facilities, Transmission, and Environmental Protection Division as a Planner II.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on Traffic and Transportation for the Orange Grove Project based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: October 28, 2008 Signed: James Adams

At: Sacramento, California

James S. Adams
Environmental Protection Office
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5504
PH (916) 653-0702, FAX (916) 654-3882
Jadams@energy.state.ca.us

5/1999
Present **Environmental Planner**
Review applications for certification to acquire permits from the California Energy Commission to build electric generating power plants. Specific technical fields include socioeconomics and traffic and transportation.

11/1997
Present **Energy and Resource Consultant**
Provide clients with technical expertise on various issues related to natural resource use and development. Current activities include managing an Intervention by the Redwood Alliance before the California Public Utilities Commission regarding the decommissioning of the Humboldt Bay Power Plant's nuclear reactor.

9/1994--
10/1997 **Senior Analyst - Safe Energy Communication Council (SECC)**
Responsible for developing and/or implementing campaigns on various energy issues involving the promotion of energy efficiency and renewable energy and advocating less reliance on nuclear power. Managed educational outreach efforts to newspaper editorial writers throughout the U.S. to encourage coverage of energy issues. Participated in meetings and negotiations with key Clinton administration officials, members of Congress and staff, national coalitions, and grassroots organizations on important energy issues (e.g. U.S. Department of Energy Budget for Fiscal Years 1996-1998). Successfully raised $140,000 from private foundations to support SECC activities.

6/1978--
12/1992 **Principal Consultant - Redwood Alliance**
Provided consulting services to the Alliance; a renewable energy/political advocacy organization. Major responsibilities included managing and/or participating in several interventions/appearances before the California Public Utilities Commission, California Energy Commission, California Legislature, U.S. Congress and the U.S. Nuclear Regulatory Commission. Issues included electric utility planning options, greater reliance on energy efficiency and renewable energy, nuclear power economic analyses, decommissioning cost estimates, and nuclear waste management and disposal.

2/1983--
8/1986 **Natural Resource Specialist**
Assisted private consulting, firms, non-profit corporations and government agencies in various projects related to the enhancement and protection of national forests in Northern California and Southern Oregon. This included contracts with the U.S. Forest Service, Fish and Wildlife Service, National Park Service, the California Coastal Conservancy, and private landowners.

6/1978--
present Consultant/Journalist/Paralegal/Lobbyist
Throughout the period of work outlined above, I have written a considerable amount of news articles and reports connected to ongoing-projects and issues of personal interest. The leg, al/administrative interventions have required extensive paralegal work to support attorneys, and technical expertise to identify and assist consultants. In addition, many of the projects required consulting services and lobbying, at the local, state and federal level whenever necessary, as well as working with the print and television media as appropriate.

From 1978 through 1984 1 served on the Board of Directors for two locals non-profit agencies devoted to sustainable community development, Redwood Community Development Council and Redwood Community Action Agency (RCAA). I also was hired on staff at RCAA as a natural resource specialist which is explained more fully above. I am proficient with computers, printers, fax machines and related equipment.

EDUCATION

M.A. Social Science. Political science and natural resources emphasis. California State University at Humboldt. Graduated December 1988.

B.A. Political Science. Political and economic aspects of natural resource development, with a particular emphasis in forest ecology and appropriate technology. California State University at Humboldt. Graduated June 1978.

Academic Honors. Member of PI GAMMU MU Honor Society since 1986.

MILITARY SERVICE

7/1969--
9/1975 U.S. Navy. Air Traffic Controller.
Honorable Discharge.

DECLARATION OF
Dr. Obed Odoemelam

I, **Obed Odoemelam** declare as follows:

1. I am presently employed by the California Energy Commission in the **Environmental Protection Office** of the Systems Assessments and Facilities Siting as a **Staff Toxicologist**.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on **Transmission Line Safety & Nuisance**, for the **Orange Grove Project** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 11/4/08 Signed: Odoemelam

At: Sacramento, California

RESUME

DR. OBED ODOEMELAM

EDUCATION:

1979-1981 University of California, Davis, California. Ph.D., Ecotoxicology

1976-1978 University of Wisconsin, Eau Claire, Wisconsin. M.S., Biology.

1972-1976 University of Wisconsin, Eau Claire, Wisconsin. B.S., Biology

EXPERIENCE:

1989
The Present: California Energy Commission. Staff Toxicologist.

Responsible for the technical oversight of staffs from all Divisions in the Commission as well as outside consultants or University researchers who manage or conduct multi-disciplinary research in support of Commission programs. Research is in the following program areas: Energy conservation-related indoor pollution, power plant-related outdoor pollution, power plant-related waste management, alternative fuels-related health effects, waste water treatment, and the health effects of electromagnetic fields. Serve as scientific adviser to Commissioners and Commission staff on issues related to energy conservation. Serve on statewide advisory panels on issues related to multiple chemical sensitivity, ventilation standards, electromagnetic field regulation, health risk assessment, and outdoor pollution control technology. Testify as an expert witness at Commission hearings and before the California legislature on health issues related to energy development and conservation. Review research proposals and findings for policy implications, interact with federal and state agencies and industry on the establishment of exposure limits for environmental pollutants, and prepare reports for publication.

1985-1989 California Energy Commission.

Responsible for assessing the potential impacts of criteria and noncriteria pollutants and hazardous wastes associated with the construction, operation and decommissioning of specific power plant projects. Testified before the Commission in the power plant certification process, and interacted with federal and state agencies on the establishment of environmental limits for air and water pollutants.

1983-1985 California Department of Food and Agriculture.

Environmental Health Specialist.

Evaluated pesticide registration data regarding the health and environmental effects of agricultural chemicals. Prepared reports for public information in connection with the eradication of specific agricultural pests in California.

DECLARATION OF
DAVID FLORES

I, **David Flores** declare as follows:

1. I am presently employed by the California Energy Commission in the Siting, Transmission and Environmental Protection Division as a **Planner 2**.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Visual Resources** for the Orange Grove Project based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: October 28, 2008 Signed: _____

At: Sacramento, California

DAVID FLORES

WORK EXPERIENCE

Sept. 1998 to Present — **Planner 2.** California Energy Commission, Energy Facilities Siting and Protection Division.

- Provide technical analysis of proposed energy planning, conservation, and development programs on land use, visual and traffic and transportation resources. Specific tasks include: the analysis of potential impacts; identification of suitable mitigation measures; preparation of testimony; participate in public workshops; present sworn testimony during evidentiary hearings, and project monitoring to ensure compliance with local, state and federal environmental laws and regulations.

March 29,1988 to September 12, 1998 — **Senior Planner.** County of Yolo Planning and Public Works Department

Senior Planner - Current and Advanced Planning (Resources Management and Planning)

Responsibilities included the following:

- Administered the establishment of Planning schedules and timeframe completion schedules; Administration and staff support to Planning Commission and Board of Supervisors; Staff support and liaison to citizen's committees. Preparation of Environmental documents (Negative Declarations, preparation of Environmental Impact Reports and Categorical Exemptions) in accordance with State and Federal Regulations.

June 1, 1976 to March 25, 1988 — **Manager of Resources** Citizens Utilities Company of California

Responsibilities included the following:

- Coordinated, planned and developed semi-annual and annual construction and operating and maintenance budgets for all Northern California operations.
- Assisted in the development of rate and fee schedules before the California Public Utilities Commission for all Northern California Operations.
- Direct five employees and twenty-five employees in the outlying operations.
- Extensive experience in specification writing, project planning and scheduling, construction management, and site supervision

EDUCATION

California State University @ Sacramento
University of California @Davis
Major: Environmental Studies
Minor: Business Administration

DECLARATION OF
Ellen Townsend-Hough

I, **Ellen Townsend-Hough** declare as follows:

1. I am presently employed by the California Energy Commission in the Environmental Siting Office of the Energy Facilities Siting Division as an Associate Mechanical Engineer.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on Waste Management for the Orange Grove Project based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: October 28, 2008 Signed: Ellen Townsend-Hough

At: Sacramento, California

Ellen Townsend-Hough

SUMMARY

I am a chemical engineer with over 20 years of experience. My professional career has afforded me many unique growth and development opportunities. Working knowledge of the California Environmental Quality Act. Strength in analyzing and performing complex engineering analyses. Also worked as a policy advisor to a decision-maker for three years.

PROFESSIONAL EXPERIENCE

Writing

- Write letters, memos, negative declarations, environmental impact reports that require technical evaluation of mechanical engineering and environmental aspects of pollution control systems, environmental impacts, public health issues and worker safety.

Technical Analysis and Presentation

- Performs mechanical engineering analysis of designs for complex mechanical engineering analysis of designs for systems such as combustion chambers and steam boilers, turbine generators, heat transfer systems, air quality abatement systems, cooling water tower systems, pumps and control systems

- Review and process compliance submittals in accordance with the California Environmental Quality Act, the Warren Alquist Act, the Federal Clean Air Act and the California and Federal Occupational Health and Safety Acts to assure compliance of projects

- Provides licensing recommendations and function as an expert witness in regulatory hearings.

- Provide public health impact analysis to assess the potential for impacts associated with project related air toxic/non-criteria pollutant emissions.

- Evaluate the potential of public exposure to pollutant emissions during routine operation and during incidents due to accidents or control equipment failure

- Provide an engineering analysis examining the likelihood of compliance with the design criteria for power plants and also examine site specific potential significant adverse environmental impacts

Technical Skills

- Establish mitigation that reduces the potential for human exposure to levels which would not result in significant health impact or health risk in any segment of the exposed population.

- Assist with on-site audits and inspection to assure compliance with Commission decisions.

- Review and evaluate the pollution control technology applied to thermal power plants and other industrial energy conversion technologies.

- Work with the following software applications: WORD, Excel, and PowerPoint.

Policy Advisor

- Provided policy, administrative and technical advice to the Commissioner Robert Pernell. My work with the Commissioner focused on the policy and environmental issues related to the Commission's power plant licensing, research and development and export programs.

- Track and provide research on varied California Energy Commission (CEC) programs. Prepare analysis of economic, environmental and public health impacts of programs, proposals and other Commission business items.

- Represent Commissioner's position in policy arenas and power plant siting discussions.

- Write and review comments articulating commission positions before other regulatory bodies including Air Resources Board, California Public Utilities Commission, and the Coastal Commission.

- Wrote speeches for the Commissioner's presentations.

EMPLOYMENT HISTORY

2002-Present	Associate Mechanical Engineer	CEC Sacramento CA
1999-2002	Advisor to Commissioner	CEC Sacramento CA
1989-1999	Associate Mechanical Engineer	CEC Sacramento CA
1992-1993	Managing Partner	EnvironNet Sacramento CA
1988-1989	Sales Engineering Representative	Honeywell Inc Commerce CA
`1987-1988	Chemical Engineer	Groundwater Technology Torrance CA
1985-1986	Technical Marketing Engineer	Personal Computer Engineers Los Angeles CA
1985-1985	Energy Systems Engineer	Southern California Gas Company Anaheim CA
1980-1985	Design and Cogeneration Engineer	Southern California Edison Rosemead CA
1975-1980	Student Chemical Engineer	Gulf Oil Company Pittsburgh PA

EDUCATION

Bachelor of Science, Chemical Engineering
Drexel University, Philadelphia Pennsylvania

Continuing Education

Hazardous Material Management Certificate, University California Davis
Urban Redevelopment and Environmental Law, University of California Berkley
Analytical Skills, California Department of Personnel Administration (DPA) Training Center
Legislative Process/Bill Analysis, DPA Training Center
Federally Certified Environmental Justice Trainer

References furnished upon request.

DECLARATION OF
Steve Baker

I, Steve Baker, declare as follows:

1. I am presently employed by the California Energy Commission in the Engineering Office of the Siting, Transmission and Environmental Protection Division as a Senior Mechanical Engineer.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Facility Design**, and supervised preparation of the staff testimony on **Power Plant Efficiency, Power Plant Reliability, Noise and Vibration** and **Geology and Paleontology**, for the Orange Grove Project based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 11/3/2008 Signed: Steve Baker

At: Sacramento, California

STEVE BAKER, P.E.
Senior Mechanical Engineer

Experience Summary

Thirty-four years experience in the electric power generation field, including mechanical design, QA/QC, construction/startup and business development/licensing of nuclear, coal-fired, hydroelectric, geothermal and windpower plants; and engineering and policy analysis of thermal power plant regulatory issues.

Education

- California State University, Long Beach--Master of Business Administration
- California State Polytechnic University, Pomona--Bachelor of Science, Mechanical Engineering
- Registered Professional Engineer (Mechanical), California —
  No. M27737 expires 6/30/2010

Professional Experience

1990 to Present--Senior Mechanical Engineer, Facilities Siting Division - California Energy Commission

Technical lead person for the analysis of generating capacity, reliability, efficiency, noise, geology, paleontology and the mechanical, civil/structural and geotechnical engineering aspects of power plant siting cases. Key contributor to Commission's investigation into market impediments to the deployment of advanced high-efficiency generating technologies.

1987 to 1990--Generation Systems/Facility Design Unit Supervisor, Siting & Environmental Division - California Energy Commission

Responsible for supervising the analysis of generating capacity, reliability, efficiency, safety, and mechanical, civil/structural, and geotechnical engineering aspects of power plant siting cases.

1981-1986--Operations Manager, Alternate Energy - Santa Fe Pacific Realty Corporation

Participated in and supervised identification, evaluation and feasibility analysis, licensing and permitting of hydroelectric, geothermal, windpower and biomass power projects.

1974-1981--Mechanical Engineer, Quality Engineer - Bechtel Power Corporation and Bechtel National, Inc.

Wrote equipment specifications, drew flow diagrams and P&ID's, performed system design and safety analysis for nuclear power plants and nuclear fuel processing plant. Wrote and implemented QA/QC procedures for nuclear power plant. Participated in construction/startup of large coal-fired power plant.

DECLARATION OF

Testimony of Dal Hunter, Ph.D., C.E.G.

I, **Dal Hunter, Ph.D., C.E.G.,** declare as follows:

1. I am presently employed by Aspen Environmental Group, a contractor to the California Energy Commission, Systems Assessment and Facilities Siting Division, as an engineering geologist.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on **GEOLOGY AND PALEONTOLOGY** for the **Orange Grove Power Plant Project** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: October 28, 2008 Signed: _____

At: Black Eagle Consulting, Inc.
Reno, Nevada

REGISTERED GEOLOGIST
ROBERT DALTON HUNTER
No. 1411
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

exp 3.31.09

Robert D. Hunter, Ph.D., C.E.G.
Engineering Geologist
Vice President

Education

- Ph.D. – Geology – 1989 – University of Nevada, Reno
- M.S. – Geology – 1976 – University of California - Riverside
- B.S. – Geology – 1972 – California State University, Fullerton

Registrations

- Professional Geological Engineer – Nevada
- Registered Geologist – California
- Certified Engineering Geologist – California

Experience

1997 to Present: Black Eagle Consulting, Inc.; Vice President. Dr. Hunter is in charge of all phases of geochemical, geological, and geotechnical projects and is responsible for conducting, coordinating, and supervising geotechnical investigations for public and private sector clients. He is very familiar with design specifications and state and federal requirements.

Dr. Hunter has also provided geological, geotechnical, and paleontological review and written and oral testimony for California Energy Commission (CEC) power plant projects including:

- El Segundo Power Redevelopment Project (Coastal)
- Magnolia Power Project (including compliance monitoring
- Ocotillo Energy Project (Wind Turbines)
- Vernon-Malburg Generating Station
- Inland Empire Energy Center (including testimony and compliance monitoring)
- Palomar Energy Project
- Henrietta Peaker Project
- East Altamont Energy Center
- Avenal Energy Center
- Teayawa Energy Center monitoring
- Walnut Energy Center (including compliance monitoring
- Riverside Energy Resource Center
- Salton Sea Unit 6 (Geothermal Turbines)
- National Modoc Power Plant
- Pastoria Energy Center
- Otay Mesa Generating Project (compliance monitoring)
- Montainview Power Plant Project (compliance)
- Consumes Power plant (compliance monitoring)
- Sunrise Power Project (compliance monitoring)

Attended Expert Witness Training Sponsored by CEC.

1978 to 1997: SEA, Incorporated; Geotechnical Manager, Engineering Geologist. Dr. Hunter was in charge of all phases of geotechnical projects for SEA, including project coordination and supervision, field exploration, geotechnical analysis, slope stability analysis, soil mechanics, engineering geochemistry, mineral and aggregate evaluations, and report preparation. Numerous investigations were undertaken on military, commercial, industrial, airport, residential, and roadway projects. He worked on many geothermal power plants, providing expertise in foundations design, slope stability, seismic assessment, geothermal hazard evaluation, expansive clay, and settlement problems. Project types included high-rise structures, airports, warehouses, shopping centers, apartments, subdivisions, storage tanks, roadways, mineral and aggregate evaluations, slope stability analyses, and fault studies.

1977 to 1978: Fugro (Ertec) Incorporated Consulting Engineers and Geologists; Staff Engineering Geologist; Long Beach, California.

Affiliations

- Association of Engineering Geologists

Publications

- Hunter, 1988, *Lime Induced Heave in Sulfate Bearing Clay Soils*, Journal of Geotechnical Engineering, ASCE, Vol. 14, No. 2, pp. 150-167.

- Hunter, 1989, *Applications of Stable Isotope Geochemistry in Engineering Geology*: Proceedings of the 25th Annual Symposium on Engineering Geology and Geotechnical Engineering.

- Hunter, 1993, *Evaluation of Potential Settlement Problems Related to Salt Dissolution in Foundation Soils*: Proceedings of the 29th Annual Symposium on Engineering Geology and Geotechnical Engineering.

DECLARATION OF
Erin Bright

I, **Erin Bright,** declare as follows:

1. I am presently employed by the California Energy Commission in the **Engineering Office** of the Siting, Transmission and Environmental Protection Division as a **Mechanical Engineer**.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Power Plant Efficiency** and **Power Plant Reliability** for the **Orange Grove Project** based on my independent analysis of the Application, supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: November 3, 2008 Signed: _____

At: Sacramento, California

Erin Bright
Mechanical Engineer

Experience Summary

One year of experience in the electric power generation field, including analysis of noise pollution, construction/licensing of electric generating power plants, and engineering and policy analysis of thermal power plant regulatory issues. One year of experience in the alternative energy field, including analysis of alternative fuel production and use.

Education

- University of California, Davis--Bachelor of Science, Mechanical Engineering and Materials Science
- University of California, Davis Extension Program--Renewable Energy Systems

Professional Experience

2007 to Present-- Mechanical Engineer, Energy Facilities Siting Division - California Energy Commission

Performed analysis of generating capacity, reliability, efficiency, noise, and the mechanical, civil/structural and geotechnical engineering aspects of power plant siting cases.

2006 to 2007--Energy Analyst, Fuels & Transportation Division - California Energy Commission

Performed analysis of use potential and environmental effects of emerging non-petroleum fuels, including compressed natural gas, biomass, hydrogen and electricity, in heavy and light duty transportation vehicles. Contributor to Energy Commission's alternative fuels plan.

DECLARATION OF
AJOY GUHA

I, **Ajoy Guha,** declare as follows:

1. I am presently employed by the California Energy Commission in the **Transmission System Engineering unit** of the Siting, Transmission and Environmental Protection Division as an Associate Electrical Engineer.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on **Transmission System Engineering**, for the **Orange Grove Project** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 10-29-08 Signed: AK Guha

At: Sacramento, California

RESUME

AJOY GUHA

Associate Electrical Engineer
California Energy Commission
1516 Ninth Street, MS 46
Sacramento, CA 95814

EDUCATION:

MSEE, POWER SYSTEMS ENGINEERING, PURDUE UNIVERSITY, INDIANA
BSEE, ELECTRICAL ENGINEERING, CALCUTTA UNIVERSITY, INDIA

CERTIFICATIONS:

REGISTERED PROFESSIONAL ENGINEER, CALIFORNIA, INDIANA & ILLIINOIS
MEMBER OF IEEE; MEMBER OF THE INSTITUTION OF ENGINEERS OF INDIA

SUMMARY OF PROFESSIONAL BACKGROUND:

Ajoy Guha, P. E. has 34 years of electric utility experience with an extensive background in evaluating and determining current and potential transmission system reliability problems and their cost effective solutions. He has a good understanding of the transmission issues and concerns. He is proficient in utilizing computer models of electrical systems in performing power flow, dynamic stability and short circuit studies, and provide system evaluations and solutions, and had performed generator interconnection studies, area transfer and interconnected transmission studies, and prepared five year transmission alternate plans and annual operating plans. He is also experienced in utilizing Integrated Resource Planning computer models for generation production costing and long term resource plans, and had worked as an Executive in electric utilities and experienced in construction, operation, maintenance and standardization of transmission and distribution lines.

WORK EXPERIENCE:

CALIFORNIA ENERGY COMMISSION, ENERGY FACLITIES SITING AND ENVIRONMENTAL DIVISION, SACRAMENTO, CA, 11/2000-Present.
Working as Associate Electrical Engineer in the Transmission System Engineering unit on licensing generation projects. Work involves evaluating generation interconnection studies and their impacts on transmission system, and providing staff assessments and testimony to the commission, and coordination with utilities and other agencies.

ALLIANT ENERGY, DELIVERY SYSTEM PLANNING, MADISON, WI, 4/2000-9/2000.
Worked as Transmission Services Engineer, performed Generator Interconnection studies and system planning studies.

IMPERIAL IRRIGATION DISTRICT, POWER DEPT., Imperial, California, 1985-1998.
Worked as Senior Planning Engineer in a supervisory position and in Transmission, Distribution and Integrated Resource planning areas. Performed interconnection studies for 500 MW geothermal plants and developed plan for a collector system, developed methodologies for transmission service charges , scheduling fees and losses. Worked as the Project Leader in the 1992 Electricity Report (ER 92) process of the California Energy Commission. Worked as the Project Leader for installation of an engineering computer system and softwares. Assumed the Project Lead in the standardization of construction and materials, and published construction standards.

CITY LIGHT & POWER, Frankfort, Indiana, 1980 – 1985.
Worked as Assistant Superintendent and managed engineering, construction and operation depts.

WESTERN ILLINOIS POWER CO-OP., Jacksonville, Illinois, 1978 – 1980.
Worked as Planning Engineer and was involved in transmission system planning.

THE CALCUTTA ELECTRIC SUPPLY CORPORATION LTD. (CESC), Calcutta, India, 1964 –1978.
Worked as District Engineer and was responsible for managing customer relations, purchasing and stores, system planning, construction, operation and maintenance departments of the most industrialized Transmission and Distribution division of the Utility. Worked as PROJECT MANAGER for construction of a 30 mile Double Circuit 132 kV gas-filled Underground Cable urban project. During 1961-63, worked as Factory Engineer for design, manufacturing and testing of transformers, motor starters and worked in a coal-fired generating plant.

DECLARATION OF
Mark Hesters

I, **Mark Hesters** declare as follows:

1. I am presently employed by the California Energy Commission in the **Strategic Transmission Planning Office** of the Siting, Transmission and Environmental Protection Division as a **Senior Electrical Engineer**.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on **Transmission System Engineering**, for the **Orange Grove Project** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: Nov 6, 2008 Signed: _____

At: Sacramento, California

Mark Hesters
Associate Electrical Engineer

Mark Hesters has sixteen years of experience in electric power regulation. He worked in the Engineering Office of the California Energy Commission's Energy Facilities Siting & Environmental Protection Division since 1998 providing analysis of California transmission systems and testimony on transmission systems in several Commission power plant certification processes. Prior to that Mark worked in the CEC's Electricity Analysis Office providing lead analysis on Southern California Edison resource issues and modeling support for all areas of California. He holds a B.S. degree from the University of California at Davis in Environmental Policy Analysis and Planning.

DECLARATION OF
Suzanne L. Phinney, D.Env.

I, Suzanne L. Phinney, declare as follows:

1. I am presently employed by Aspen Environmental Group, consultant to the California Energy Commission's Facilities Siting Office of the Systems Assessments and Facilities Siting Division as a Senior Associate.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on Alternatives for the Orange Grove Plant Licensing Case Project based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: October 29, 2008 Signed: Suzanne L Phinney

At: Sacramento, California

SUZANNE L. PHINNEY, D. ENV.
Vice President, Sacramento Operations

ACADEMIC BACKGROUND

Doctorate, Environmental Science & Engineering (D.Env.),
University of California, Los Angeles, 1981
M.S., Marine Biology, Dalhousie University, Halifax,
Nova Scotia, Canada, 1975
B. A. Biological Sciences
University of California, Berkeley, 1973

PROFESSIONAL EXPERIENCE

Dr. Phinney has over 20 years of experience in the environmental field, supporting both the public and private sectors in environmental remediation, air and water quality assessments, risk assessment, regulatory compliance, permitting and project/program management.

Aspen Environmental Group **2001 to present**

As Vice President, Sacramento Operations, Dr. Phinney is responsible for all aspects of work conducted from Aspen's Sacramento office. Her responsibilities include project management, client support and biological, air and water resource analyses. Dr. Phinney was project manager for Aspen's technical contributions, graphics and production efforts related to the California Energy Commission's Environmental Performance Report which details the current and historical air, water and biological impacts from in-state generation facilities. She is currently scoping a major effort for the Energy Commission to review and update information on alternative electric generation technologies. Dr. Phinney is also serving as author and Aspen Power Plant Coordinator for several power plant applications currently under review at the Energy Commission.

GenCorp **1999 to 2000**

As Vice President, Environmental and Regulatory Affairs, Dr. Phinney held primary responsibility for coordinating the company's aerospace and automotive environmental activities with various federal, state, and local regulatory agencies. Her specific responsibilities included: working with external groups and entities to develop responsible environmental legislation, regulations, and standards and the implementation of sound public policy; developing stakeholder base and strategy to ensure that company objectives were achieved; facilitating company and regulatory agency discussions to achieve more comprehensive and quicker remediation of sites; and spearheading a stakeholder group to develop and fund scientific studies on selected chemicals of concern. Specific projects include:

Perchlorate Standard Setting: Developed strategy to convince state agency to refrain from a standard setting process that would have resulted in a premature, highly restrictive standard. Strategy involved the identification and completion of focused health studies in an unprecedented rapid timeframe, development of multi-stakeholder partnership group and open-ended frequent communication with all parties.

NOx Reduction Stakeholder Group: Coordinated business, health, environmental, regulatory agency and elected official representatives in an accelerated process to identify and implement actions that would reduce emissions of nitrogen oxides (NOx) in the Sacramento region. In the space of nine months, group has created legislation that will bring $70,000,000 of incentive funds to the region, has significantly advanced introduction of new technologies, developed educational materials and secured regulatory agency commitments to streamline approval process and timelines.

Aerojet General Corporation **1984 to 1999**

As Vice President, Environmental, Health and Safety, Dr. Phinney ensured that programs were in place to meet all regulatory requirements and company initiatives. Her responsibilities included: providing strategic direction

and management of all superfund-related investigation and remediation activities; communicating environmental requirements, concerns, and successes to both internal and external audiences, including the board of directors, investment banking, and the analyst community; and participating as a member of the leadership council in defining company-wide business objectives and targets.

Dr. Phinney created the first corporate ESH department, defining and staffing key functional areas. She managed a $20,000,000 annual budget and oversaw a staff of up to 30 professionals. Select accomplishments include: the development of remediation technologies that resulted in the cleanup of over 50 billion gallons of contaminated groundwater; development of the world's first groundwater treatment facility for perchlorate; representation on numerous legislative and regulatory task forces and leadership positions on external business and community EHS committees and councils; and extensive public outreach efforts. Representative projects include:

- **Carveout of Noncontaminated Land:** Participated in negotiations and meetings with state agency to carve out 1,500 acres from "Superfund" designation. Oversaw the completion of investigation activities and the submission of a report which resulted in removal of the acreage from any future regulatory requirements.

- **Development of Cost-Efficient NDMA Treatment Technology:** Completed screen and bench testing of alternative NDMA treatment technologies which ultimately saved 95% of the electrical power consumed by other methods of NDMA removal previously used onsite.

- **Construction of Perchlorate Treatment Facility:** Designed and constructed the world's first perchlorate treatment plant, a 4,000 gpm capacity with expansion capabilities to 8000 gpm. Received the Aerojet Technology Development Award and GenCorp Technology Award for this project.

- **Reduction of Soil Remediation Costs:** Conducted statistical calculations and toxicology review of metal-impacted soils and presented findings to the California EPA to prove that the soils did not pose a health threat. As a result, received agency agreement not to require remediation of 2,000 cubic yards of beryllium impacted soils, saving over $250,000 in planned soil remediation costs.

- **Recovery of Insurance Costs:** Provided extensive support to legal counsel in insurance recovery actions. Provided back-up documentation for all environmental invoices dating back to 1991 and documented all environmental operations activities since that date. Actions supported reimbursement of tens of millions of dollars by insurers in past costs.

- **Safety and Environmental Awards:** Under Dr. Phinney's management, Aerojet received the Sacramento Safety Center's highest safety award in 1998 for its outstanding safety record. The company was also a 1998 winner in the state of California's waste reduction awards program (WRAP).

- **Environmental Compliance:** Ensured that the company received no notices of major environmental violations and/or fines. Significantly reduced total environmental incidents and reportable incidents through the implementation of health and safety training programs throughout the plants.

- **Avoidance of Disposal Costs:** Received RCRA treatment/storage permits for seven RCRA units in Sacramento, which allowed the company to treat materials on site versus off site disposal, resulting in cost savings of approximately $2,000,000 per year. Similarly surplus sales of waste material in Sacramento netted $38,000 with disposal cost avoidance of $1,130,000.

- **Closure of Facility/Regulatory Compliance:** Received timely approval of the closure of the Chino Hills facility, significantly reducing the explosive inventory and closing out the radioactive materials license. Also, completed asbestos and lead paint building survey with results indicating only a limited exposure from these issues.

- **Waste Reduction:** Managed highly effective waste reduction programs. Eliminated use of all CFC materials well in advance of regulatory requirements. Increased waste reduction and cost avoidance of hazardous waste disposal by negotiating sales of 75% of surplus chemicals

- **Community Relations/Partnerships:** Worked closely with community groups on issues of concern to the community and the company. As chair of the Cleaner Air Partnership, a joint project of the American Lung

Association and the Metropolitan Chamber of Commerce, developed strategies and defined educational efforts to help the Sacramento region achieve air quality standards.

Represented the business community on the Sacramento Water Forum, a five-year partnership effort which successfully defined water supply and environmental needs 30 years into the future. Also served on the City of Sacramento Toxics Commission and the joint Sacramento City/County Environmental Commission.

- **Banking/Financial Expert Witness/Congressional Testimony:** Provided briefings to financial and banking institutions regarding Aerojet's environmental programs and liabilities. Presented testimony before a joint congressional committee on defense reimbursement of environmental costs.

- **Government Negotiations:** Negotiated and subsequently implemented all requirements under a Partial Consent Decree with federal and state government agencies for the investigation of the 8,500 acre Sacramento site.

PREVIOUS EXPERIENCE **1976 to 1984**

As a Senior Environmental Scientist for **Jacobs Engineering Group,** conducted toxicological, ecological, and air and water quality assessments.

As Research Associate for the **Department of Environmental Science and Engineering at the University of California**, Los Angeles, analyzed legal, economic, public health, and administrative barriers to waste water reuse. Also conducted analysis of ecological and institutional factors in coastal siting of power plants.

As Instructor at **Southwest Los Angeles Junior College** taught lecture and laboratory course in general science.

TRAINING

Certificate, Executive Program - University of California, Davis, 1989

HONORS AND AWARDS

Who's Who of American Women, 18th Edition
YWCA Outstanding Woman of the Year (Sciences) Award - 1992
Woman of Achievement Award, Downtown Capitol Business and Professional Women - 1993
Individual Award for Outstanding Contribution in Air Quality - 1995
Sacramento Safety Center Incorporated, Eagle Award for Safety - 1998

ACTIVITIES AND ASSOCIATIONS

Member, National Association of Environmental Professionals
Editorial Board, The Environmental Professional - 1987 to 1989
City of Sacramento Toxic Substances Commission - 1986 to 1988
Sacramento Environmental Commission - 1988 to 1991
Board of Directors, League of Women Voters of Sacramento - 1989 to 1999; President - 1996 to 1997; Co-President - 1997 to 1998
Toxics Consultant, League of Women Voters of Sacramento - 1988 to 1989
Member, Advisory Committee on AB 3777 (Risk Management Prevention Programs)
Board of Directors, American Lung Association of Sacramento-Emigrant Trails - 1992 to 2000; President - 1998 to 1999
Board of Directors, Sacramento Metropolitan Chamber of Commerce - 1992 to 1997; Vice President, Public Policy - 1996 to 1997
Board of Directors, Air and Waste Management Association - 1991 to 1994
Steering Committee Chair, Cleaner Air Partnership - 1993 to 1996, 2000 to 2001; Executive Committee - 1993 to Present
Co-chair, TCE Issues Group - 1994 to 2000
Sacramento Water Forum - 1995 to 2000

Rate Advisory Committee, Sacramento Municipal Utility District - 1999 to 2001

SELECTED PUBLICATIONS/PRESENTATIONS

Phinney, S.L., "Trends in Industrial Waste Generation and Management" Presented at National Ground Water Association Conference, Las Vegas, Nevada, 1996.
Phinney, S.L., "Effective Management of an RI/FS to Reduce Financial Exposure," Manufacturers Alliance Environmental Management Council, Washington, D.C., 1995.
Phinney, S.L., "Knowing Your Compliance Challenge," 7th Annual California Statewide Community Awareness and Emergency Response (CAER) Conference, Sacramento, California, 1995.
Phinney, S.L., "Industry's Role in Broadening the Use of Alternative Fuels in America," Clean Cities Ceremony, Sacramento, California, 1994.
Phinney, S.L., "Aerospace Industry Perspective on Defense Conversion," AAAS Annual Meeting, San Francisco, California, 1994.
Phinney, S.L., "Aerojet's Waste Reduction Successes," Business for the Environment Conference, Sacramento, California, 1993.
Phinney, S.L., "Company Worker Trip Reduction Programs Under the Clean Air Act Amendments." MAPI Hazardous Materials Management Council, Washington, D.C., 1993.
Phinney, S.L., Testimony Before House Government Operations Subcommittee, 1993.
Phinney, S.L., Moderator - The Clean Air Act, A Public Forum, Sacramento, California, 1993.
Phinney, S.L., Plenary Session Chairperson and Speaker, "Business and the Environment: Must You Sacrifice One for the Other?" National Association of Environmental Professionals Conference, Seattle, Washington, 1992.
Phinney, S.L., "Facing the Challenge: The New California EPA." HazMat Northern California Conference, San Jose, California, 1992.
Phinney, S.L., "Understanding the Client Perspective." Environmental Business Conference, Pasadena, California, 1991.
Phinney, S.L., Panelist - Women of Science: Secrets of Success. Workshop, AAAS Annual Meeting, Washington, D.C., 1991.
Phinney, S.L., Keynote Address, ADPA International Symposium on Compatibility and Processing, San Diego, California, 1991.
Phinney, S.L., Keynote Address, Women in Science and Technology Conference, Jackson, Mississippi, 1991.
Phinney, S.L., Guest Speaker, Sacramento County Bar Association, Environmental Law Section, Sacramento, California 1991.
Phinney, S.L., "PRP Response to RI/FS Activities." Lecture Presented to U.C. Davis Extension Course, January, 1991.
Phinney, S.L., "Managing CERCLA Compliance from the Corporate Perspective." Hazardous Materials Management Conference/West, Long Beach, California, 1988.
Phinney, S.L. and C.A. Fegan, "Identifying a Feasible, Effective Treatment Method for an Unusual Chemical of Concern." Proceedings, American Defense Preparedness Association 16th Environmental Symposium, New Orleans, Louisiana, 1988.
Phinney, S.L., "A Proactive Superfund Cleanup by Industry." Proceedings of the 4th Annual Hazardous Materials Management Conference/West, Long Beach, California, 1988.
Thompson, C.H., S.L. Phinney and F.R. McLaren., "Aerojet: A Regional Site Program - Problem Definition." Proceedings of the Hazardous Waste and Environmental Emergencies Conference, Cincinnati, Ohio, 1985.
Kahane S.W., S.L. Phinney and A. Wright, "The Tightening Environmental Regulatory Climate for Hazardous Waste Management - Current Mandates and Future Directions for Industrial Compliance." Proceedings of the 1984 AIChE Summer National Meeting, Philadelphia, Pennsylvania, 1984.
Bachrach, A., D.M. Morycz, S.L. Phinney and S.W. Kahane, "Regulation and Offshore Oil and Gas Facilities." In: Emerging Energy/Environmental Trends and the Engineer. Eds. R.D. Nuefeld and R.W. Goodwins, 1983.
Lindberg, R.G., S.L. Phinney, J. Daniels and J. Hastings (eds)., "Environmental Assessment of the U.S. Department of Energy's Solar Thermal Technology Program." Prepared for the U.S. Department of Energy, June, 1982.

Kahane, S.W., S.L. Phinney, J.A. Hill and R.C. Sklarew, "Key Considerations in Assessing the Air Impacts of Projected Outer Continental Shelf Oil and Gas Development," presented at the 74th Annual Air Pollution Control Association Meeting, Philadelphia, Pennsylvania, 1981

Phinney, S.L., "The U.S. Environmental Protection Agency's Pesticide Registration Program: A Case Study - Chloramben." Doctoral Dissertation, Environmental Science and Engineering Program, University of California, Los Angeles, California, 1981.

Phinney, S.L., (contributing author) et al. "Institutional Barriers to Wastewater Reuse in Southern California." Environmental Science and Engineering Report Prepared for the Office of Water Research and Technology, U.S. Department of the Interior, 1979.

Phinney S.L., "Area-Restricted Feeding in American Plaice." Masters Thesis. Dalhousie University, Halifax, Nova Scotia, Canada, 1975.

DECLARATION OF
CHRIS DAVIS

I, Chris Davis, declare as follows:

1. I am presently employed by the California Energy Commission in the Siting Office of the Systems Assessment & Facilities Siting Division as a Compliance Project Manager (Classification: Planner II).

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the Compliance General Conditions and Closure Plan section for the Orange Grove Project Staff Assessment based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: October 30, 2008

Signed: Chris Davis

At: Sacramento, California

Chris Davis

California Energy Commission
1516 Ninth St., MS-2000
Sacramento, California 95814
(916) 654-4842

Professional Experience

January 2008 to present

California Energy Commission
Planner II Compliance Project Manager – Direct technical staff in tasks related to power plant project design, construction, operation, and associated environmental issues. Negotiate agreements between power plant operators, public agencies, and community groups. Consult with engineering, legal and technical staff to identify and resolve technical issues.

2007-2008

California Energy Commission
Energy Specialist I – Education and outreach for the New Solar Homes Partnership (NSHP) and the Building Standards Office. Developed fact sheets on proposed changes to the 2008 building standards and a tutorial on how to use the PV Calculator to figure photovoltaic system power production and expected incentives. Wrote a case study, articles and Web pages explaining various aspects of the NSHP program, Certified by CalCERTS (California Energy Rating and Testing Services) as a Home Energy Rating System (HERS) rater for photovoltaic systems. Organized, developed materials for, and staffed Energy Commission booth/tables for conferences put on by California Building Energy Consultants (CABEC), California Building Officials (CALBO) and International Air Conditioning Institute (IHACI).

2005-2007

State Water Resources Control Board
Information Officer I – Liaison between State Water Board, Central Valley Regional Water Board and media, as well as and media. Issues included waste (NPDES) permits, groundwater contamination and treatment, once-through cooling, emerging contaminants, contaminated beaches, stormwater, and areas of special biological significance off the California coast. Worked with reporters from the LA Times and other major California news organizations.

2001-2005 ***California Energy Commission***
Information Officer I – Joined the Energy Commission media office during California's power crisis. Liaison between CEC and media on the subject of power plant licensing. Wrote news releases about projects as they reached each milestone in the siting process, including a number of releases for Governor's office about new facilities going on-line. Initiated and developed Power Plant Fact Sheet, in cooperation with Siting Office manager. Served as 2004 president of the State Information Officers Council.

2000-2001 ***Department of Consumer Affairs, Bureau of Automotive Repair***
Information Officer I – Bureau of Automotive Repair (BAR) Communications Team Leader. Worked with media throughout California for extremely successful launch of the Smog Check Consumer Assistance Program to aid residents whose cars failed the smog test. Updated and wrote Smog Check fact sheets. Worked with DMV to include Smog Check information with car registration renewal notices.

1994-2000 ***Metro Networks, Sacramento***
News Bureau Chief – My staff of 17 provided anchored newscasts and network wire stories for 19 Sacramento, Stockton and Modesto radio stations. Liaison with local television stations and phone company for broadcast circuits. Kept all electronic equipment operating. Developed proposals and signed radio state affiliates.

1983-1994 ***KZAP, Sacramento***
News & Public Affairs Director – Won 12 broadcast news awards, ran internship program, wrote and edited annual FCC-required Issues/Programs report. Served as president of the Sacramento Valley Broadcasters Association (1993-1994) and Capital Radio-Television News Directors Association (1988-1994).

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV

APPLICATION FOR CERTIFICATION
ORANGE GROVE POWER PLANT PROJECT

DOCKET NO. 08-AFC -4
PROOF OF SERVICE
Revised 10/27/08

INSTRUCTIONS: All parties shall either (1) send an original signed document plus 12 copies or (2) mail one original signed copy AND e-mail the document to the address for the Docket as shown below, AND (3) all parties shall also send a printed or electronic copy of the document, which includes a proof of service declaration to each of the individuals on the proof of service list shown below:

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 08-AFC-4
1516 Ninth Street, MS-15
Sacramento, CA 95814-5512
docket@energy.state.ca.us

APPLICANT

Stephen Thome
J-Power USA Development
1900 East Golf Road, Suite 1030
Schaumberg, IL 60173
sthome@jpowerusa.com

Mike Dubois
J-Power USA Development
1900 East Golf Road, Suite 1030
Schaumberg, IL 60173
mdubois@jpowerusa.com

APPLICANT CONSULTANT

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COUNSEL FOR APPLICANT

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jluckhardt@downeybrand.com

Wayne Song
Morgan, Lewis & Bockius LLP
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Los Angeles, CA 90071
wsong@morganlewis.com

INTERESTED AGENCIES

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P.O. Box 639014
Folsom, CA 95763-9014
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Steve Taylor
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8306 Century Park Court
San Diego, CA 92123
srtaylor@semprautilities.com

INTERVENORS

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Alliance for a Cleaner Tomorrow (ACT)
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501 West Broadway, Suite 600
San Diego, CA 92101
amoreau@klinedinstlaw.com

Archie D. McPhee
40482 Gavilan Mountain Road
Fallbrook, CA 92028
archied1@earthlink.net

ENERGY COMMISSION

JAMES D. BOYD
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jboyd@energy.state.ca.us

ARTHUR ROSENFELD
Commissioner and Associate Member
pflint@energy.state.ca.us

Kenneth Celli
Hearing Officer
kcelli@energy.state.ca.us

Felicia Miller
Project Manager
fmiller@energy.state.ca.us

Jared Babula
Staff Counsel
jbabula@energy.state.ca.us

Public Adviser's Office
publicadviser@energy.state.ca.us

DECLARATION OF SERVICE

I, April Albright declare that on November 6, 2008 I deposited copies of the attached Orange Grove Project Staff Assessment in the United States mail at Sacramento, CA, with first-class postage thereon fully prepaid and addressed to those identified on the Proof of Service list above.

OR

Transmission via electronic mail was consistent with the requirements of California Code of Regulations, title 20, sections 1209, 1209.5, and 1210. All electronic copies were sent to all those identified on the Proof of Service list above.

I declare under penalty of perjury that the foregoing is true and correct.

Original signature in Dockets
April Albright

Attachments