Final Initial Study

MODESTO IRRIGATION DISTRICT ELECTRIC GENERATION STATION RIPON

Small Power Plant Exemption (03-SPPE-1)
San Joaquin County

CALIFORNIA ENERGY COMMISSION

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STAFF REPORT

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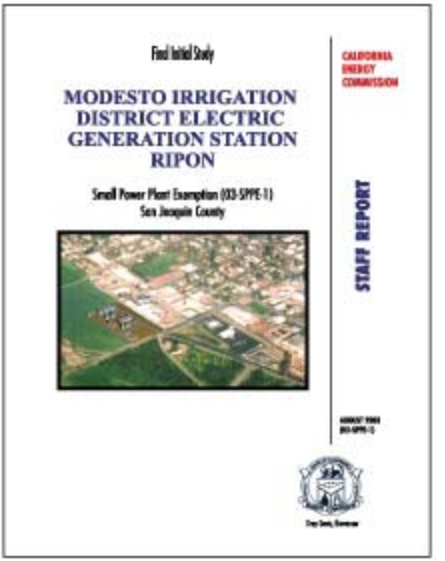

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EXECUTIVE SUMMARY

Testimony of James W. Reede, Jr., Ed.D

This Final Initial Study contains the California Energy Commission (Energy Commission) staff's evaluation of the Modesto Irrigation District Electric Generation Station (MEGS) Ripon, Application for a Small Power Plant Exemption (SPPE).

The Energy Commission has the exclusive power to certify all sites and related facilities for thermal electrical power plants of 50 MW or larger within the state. A provision of the Warren-Alquist Act allows the Energy Commission to exempt power plants not exceeding 100 MW from the site certification process if it finds that no substantial adverse impact on the environment or energy resources will result from the construction or operation of the proposed facility. Under this exemption process the Energy Commission prepares the environmental document that will be used by local and state agencies that issue the necessary permits.

In the Final Initial Study, staff examined the environmental, public health and safety, and transmission systems engineering aspects of the MEGS project and presents its conclusions and proposed conditions of exemption that staff believes are necessary to mitigate or avoid significant adverse environmental impacts of the proposed facility, if exempted. This Final Initial Study is not a Committee document nor is it the final or proposed decision.

BACKGROUND

On April 21, 2003, the Modesto Irrigation District (MID), filed an Application (03-SPPE-1) for SPPE for the MEGS project, and staff began its review of the project. The Energy Commission appointed a Siting Committee to oversee the SPPE application on April 30, 2003.

The analyses contained in this Initial Study are based upon information from: 1) the SPPE Application for the MEGS; 2) Supplement "A", Zero Liquid Discharge Amendment to the SPPE; 3) the applicant's responses to data requests; 4) interested federal, state, and local agencies; 5) various documents and publications listed at the end of each section and ; 6) public workshops and site visits.

The Energy Commission staff and the committee assigned to the case have made a substantial effort to notify interested parties and encourage public participation. The Energy Commission has:

- Mailed two separate Notices of Receipt to interested parties, local libraries, responsible and trustee agencies, and contiguous property owners (one notice mailed on April 23, 2003, for the Application for Small Power Plant Exemption and one notice on June 23, 2003, for the Zero Liquid Discharge Amendment to the SPPE;
- Mailed a Notice of Public Hearing and Site Visit on May 1, 2003, to responsible and trustee agencies, persons with contiguous property to the proposed project, and individuals that expressed interest in the project;

- Placed an advertisement notice in the Ripon Record on May 14, 2003, to announce the Public Hearing and Site Visit;
- Conducted an Informational Hearing and Site Visit on May 16, 2003;
- Held Public Workshops on May 16 and June 13, 2003;
- Mailed a Notice of Availability of the Draft Initial Study to agencies, nearby property owners and other interested parties.
- Mailed a Notice for a Draft Initial Study Workshop on July 23, 2003, to responsible and trustee agencies, persons with contiguous property to the proposed project, and individuals that have expressed interest in the project.
- Held a public Draft Initial Study Workshop on August 8, 2003.

PROJECT DESCRIPTION

MID proposes to construct and operate a 95-megawatt (MW) generation plant called the Modesto Irrigation District Electric Generation Station (MEGS). The natural gas-fired simple cycle plant will consist of two General Electric LM 6000 SPRINT combustion turbines. Part of the proposed project includes the construction of approximately 0.25 miles of a new 69-kV sub-transmission line and a fiber optic cable, approximately 0.25 miles of a new eight-inch natural gas supply line, and water supply and wastewater tap lines connecting with existing City of Ripon lines located under South Stockton Avenue. **See Project Description Figure 3**

The project is proposed to be located on a 12.25-acre parcel at South Stockton Avenue and Doak Boulevard in the City of Ripon, San Joaquin County, California and will occupy approximately eight acres on the northern side of the site.

The proposed power plant would utilize raw water from the City of Ripon's non-potable water system. Water for cooling, process water, and sanitary uses would be provided via new pipelines constructed by the City of Ripon. The proposed water pipeline would be routed within South Stockton Avenue directly east of the project site.

As originally proposed, the MEGS project would have required an average of 122 gallons per minute of a non-potable water supply with a peak demand of 244 gpm. However, the project has been amended to include a zero liquid discharge (ZLD) system. This system will allow for recycling of waste streams for reuse within the facility, which will result in lower non-potable water demands of 83 gpm on average and 167 gpm peak.

A more complete description of the project, including a description and maps of the proposed upgrades to the transmission, water, and natural gas pipeline upgrades, is contained in the **PROJECT DESCRIPTION** section of this Initial Study.

STAFF'S ASSESSMENT

Each technical area section of the Final Initial Study contains a discussion of impacts, and where appropriate, mitigation measures presented in the form of conditions of exemption. The Final Initial Study includes staff's discussion of:

- The environmental setting surrounding the project area;
- Significant impacts to public health and safety, and measures proposed to mitigate these impacts; and
- Significant environmental impacts, and measures proposed to mitigate these impacts.

The table on the following page presents a summary of the potential impacts of the MEGS. Staff believes that if the Conditions of Exemption recommended herein are implemented, MEGS will not cause significant adverse direct, indirect, or cumulative impacts.

STAFF RECOMMENDATION

The staff has concluded that, with the implementation of all conditions as recommended herein, the MEGS Project will not result in any significant impacts to public health and safety or the environment.

Summary of Conclusions: Environmental and Engineering Checklist

	Potentially Significant Impact	Less Than Significant Impact With Mitigation	Less Than Significant Impact	No Impact
ENVIRONMENTAL				
Agricultural Resources				X
Air Quality		X		
Biological Resources		X		
Cultural Resources		X		
Energy Resources				X
Geology and Paleontology		X		
Hazardous Materials and Waste		X		
Hydrology and Water Quality			X	
Land Use and Recreation			X	
Noise			X (a)	
Public Health			X	
Socioeconomics				X
Traffic & Transportation			X	
Visual Resources		X		
ENGINEERING				
Transmission Line Safety and Nuisance			X	
Transmission System Engineering		X		

a) In response to community concerns, and to verify staff's assumptions, staff is conducting an ambient noise survey at a nearby residence, to take place the week of August 25, 2003. This information will be provided prior to the hearings.

PUBLIC REVIEW

A 7-day public review period will follow the release of this Final Initial Study. Comments on the Final Initial Study must be submitted to the Energy Commission by August 29, 2003, at the address below and/or presented at hearings scheduled for the project. For further information or to submit written comments, please contact:

James W. Reede, Jr. Ed.D, Project Manager
MEGS Ripon Project
California Energy Commission
1516 9th Street, M.S. 15
Sacramento, CA 95814
Phone (916) 653-1245
Fax (916) 654-3882
E-mail: jreede@energy.state.ca.us

There is a public hearing scheduled for September 2, 2003, beginning at 12:30 P.M. at the Modesto Irrigation District offices located at 1231 Eleventh Street, Modesto, CA.

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PROPOSED MITIGATED NEGATIVE DECLARATION

Pursuant to Title 14, California Code of Regulations, Sections 15070 and 15071 and pursuant to the California Energy Commission's Rules of Practice and Procedure (Cal. Code Regs., tit. 20, section 1101 et seq.) and Site Certification Regulations (Cal. Code Regs., tit. 14, section 1701 et seq.), the Deputy Chief of California Energy Commission's Division of Systems Assessment and Facility Siting does prepare, make, declare, publish, and cause to be filed with the County Clerk of San Joaquin County, State of California, this Mitigated Negative Declaration for the Modesto Irrigation District Electric Generation Station (MEGS) Ripon, Application for Small Power Plant Exemption (03-SPPE-1).

1. The State Energy Resources Conservation and Development Commission (Energy Commission) is responsible for licensing all thermal power plants in California that have a capacity of 50 megawatts (MW) or greater. (Pub. Resource Code, section 25500.) The Energy Commission may exempt power plants from these requirements if they have a capacity not exceeding 100 MW and if the Energy Commission finds that the project will not create a substantial adverse impact on the environment or energy resources. (Pub. Resources Code section 25541.) Such projects are subject to applicable local permitting requirements.

   The Energy Commission is the Lead Agency for all projects that it licenses or exempts. (Pub. Resources Code section 25519(c).) The Energy Commission proposes to grant the Application for a Small Power Plant Exemption filed by Modesto Irrigation District (MID) on April 21, 2003, for the Modesto Irrigation District Electric Generation Station (MEGS) Ripon project. If the Energy Commission grants the exemption, MID will be required to obtain all necessary local, regional, state and federal permits to construct and operate the proposed facility.

2. Title and Short Description of Project:

   a) Modesto Irrigation District Electric Generation Station (MEGS) Ripon, Application for a Small Power Plant Exemption (03-SPPE-1).

   b) The proposed project is to construct and operate a 95-megawatt (MW) generation plant called the Modesto Irrigation District Electric Generation Station (MEGS) Ripon. The natural gas-fired simple cycle plant will consist of two General Electric LM 6000 SPRINT combustion turbines. Part of the proposed project includes the construction of approximately 0.25 miles of new 69-kV sub-transmission line and fiber optic cable, approximately 0.25 miles of new eight-inch natural gas supply line, and water supply and wastewater tap lines connecting with existing City of Ripon lines located under South Stockton Avenue.

3. Location of Project:

   a) Ripon (Section 30, T2S, R8E, MDBM), (see PROJECT DESCRIPTION — Figure 1, Proposed Project Site, Transmission Line and Water Supply Line):

b) City of Ripon and unincorporated San Joaquin County (see PROJECT DESCRIPTION — Figures 2 and 3)

4. Project Applicant:

   Modesto Irrigation District
   1231 Eleventh Street
   PO Box 4060
   Modesto, CA 95352

5. Energy Commission staff completed an Initial Study (IS) for the proposed MEGS project. The IS concludes that the revisions agreed to by the applicant, prior to release of the IS for public review, will avoid or mitigate all potential significant effects to a point where clearly no significant effects would occur.

6. Further information about the MEGS, the IS, or the Energy Commission's exemption process may be obtained by contacting the California Energy Commission's Siting Project Manager for MEGS project, James W. Reede, Jr., Ed.D, California Energy Commission,1516 9th Street, M.S. 15, Sacramento, CA 95814, Phone (916) 653-1245.

7. The mitigation measures included in the project to avoid potentially significant effects are included in the Initial Study at the end of each technical section.

Therefore, the Energy Commission finds that the Initial Study has identified potentially significant effects on the environment, but 1) revisions on the project plans or proposals made by, or agreed to by, the applicant will avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and 2) there is no substantial evidence, in light of the whole record before the agency, that the project, as revised, may have a significant effect on the environment. As a result, the Energy Commission finds that approval of the Application for a Small Power Plant Exemption for the Modesto Irrigation District Electric Generation Station (MEGS) Ripon will result in no significant adverse environmental impact.

INTRODUCTION

James W. Reede, Jr. Ed.D

PURPOSE OF THIS REPORT

The applicant, Modesto Irrigation District (MID) filed a request for a Small Power Plant Exemption (SPPE) with the California Energy Commission (Energy Commission) on April 21, 2003. The Energy Commission has appointed a Committee to hear the case. An Informational Hearing was held at the Modesto Irrigation District Headquarters on May 16, 2003.

California's Warren-Alquist Act (Pub. Resources Code (PRC) § 25000 et seq.) gives the Energy Commission the exclusive power to certify all sites and related facilities for thermal electrical power plants of 50 MW or more within the state (Pub. Resources Code § 25120 and 25500 et seq.). Section 25541 of the Warren-Alquist Act allows the Energy Commission to exempt power plants not exceeding 100 MW from the site certification process if it finds that no substantial adverse impact on the environment or energy resources will result from the construction or operation of the proposed facility.

The proposed plant is also subject to the requirements of the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.). Pub. Resources Code section 25519 (c) states that the Energy Commission shall act as lead agency under CEQA for projects that it either certifies or exempts from certification. Staff has prepared this Initial Study in accordance with CEQA and Title 20, California Code of Regulations (CCR) § 1934 et seq. and 2300 et seq.

Staff's environmental analysis in the Initial Study documents the factual basis for staff's recommendation regarding the project's potential to result in substantial adverse impacts on the environment or energy resources.

Staff has included Conditions of Exemption in various technical areas, which if implemented along with the Applicant's proposed mitigation measures, should ensure that the project would result in no substantial adverse impact. In addition, staff will adopt a reporting or monitoring program designed to ensure compliance during project development and avoid significant impacts or the need for further mitigation.

The Energy Commission's Siting Committee (Committee) will conduct a hearing at which all parties will have an opportunity to comment on the Initial Study and make recommendations on the SPPE application. The Committee will consider the application, staff's analysis, and any other evidence presented in the proceedings to determine whether to recommend granting the SPPE. Following the hearing, the Committee will prepare and publish a proposed decision. The full Commission will then hold a hearing for final arguments and render a decision on the application.

Title 14, California Code of Regulations section 15063 (d) states that an Initial Study shall contain the following items:

- A description of the project including the location of the project;
- An identification of the environmental setting;
- An identification of environmental effects by use of a checklist, matrix, or other method, provided that entries on a checklist or other form are briefly explained to indicate that there is some evidence to support the entries;
- A discussion of the ways to mitigate the significant effects identified, if any;
- An examination of whether the project would be consistent with existing zoning, plans, and other applicable land use controls; and
- The name of the person or persons who prepared or participated in the Initial Study.

The Energy Commission has made a substantial effort to notify interested parties and encourage public participation. The Energy Commission has:

- Mailed two separate Notices of Receipt to interested parties, local libraries, responsible and trustee agencies, and contiguous property owners (one notice mailed on April 23, 2003 for the Application for Small Power Plant Exemption, and one on June 23, 2003 for the Zero Liquid Discharge Amendment to the SPPE.
- Mailed a Notice of Public Hearing and Site Visit on May 1, 2003 to responsible and trustee agencies, persons with contiguous property to the proposed project, and individuals that have expressed interest in the project;
- Placed an advertisement notice in the Ripon Record on May 14, 2003 to announce the Public Hearing and Site Visit.
- Conducted an Informational Hearing and Site Visit on May 16, 2003.
- Held Public Workshops on May 16 and June 13, 2003.
- Mailed a Notice of Availability of the Draft Initial Study to agencies, nearby property owners and other interested parties.
- Mailed a Notice for a Draft Initial Study Workshop on July 23, 2003 to responsible and trustee agencies, persons with contiguous property to the proposed project, and individuals that have expressed interest in the project.
- Held a public Draft Initial Study workshop on August 8, 2003.

Staff is accepting public comment on this Final Initial Study until August 29, 2003. Please see the Executive Summary for details.

PROJECT DESCRIPTION

Testimony of James W. Reede, Jr., Ed.D

PROJECT TITLE

Modesto Irrigation District Electric Generation Station Ripon, Application for Small Power Plant Exemption (03-SPPE-01).

LEAD AGENCY NAME AND ADDRESS

California Energy Commission
Systems Assessment and Facilities Siting Division
1516 Ninth Street
Sacramento, CA 95814

PROJECT LOCATION

MID proposes to construct and operate a 95-megawatt (MW) generation plant called the Modesto Irrigation District Electric Generation Station (MEGS). The project is proposed to be located on a 12.25-acre site at South Stockton Avenue and Doak Boulevard in the City of Ripon, San Joaquin County, California, and will occupy approximately eight acres near the northern side of the project site. Modesto Irrigation District (MID) will develop, build, own, and operate the MEGS to serve residential, industrial, and commercial customers in Stanislaus and San Joaquin Counties. **See Figures 1 & 2**.

PROJECT SPONSOR'S NAME AND ADDRESS

Modesto Irrigation District
1231 Eleventh Street
P. O. Box 4060
Modesto, CA 95352

GENERAL PLAN DESIGNATION

South Stockton Planning District (Ripon General Plan)

ZONING

Heavy Industrial (H-I)

BACKGROUND AND DESCRIPTION OF PROJECT

On April 21, 2003, the Modesto Irrigation District (MID) filed an application for a Small Power Plant Exemption (SPPE), (03-SPPE-1). MID is seeking an exemption from the California Energy Commission's (Energy Commission) licensing requirements. If an

exemption is granted, the applicant will need to secure the appropriate licenses and permits for the project from various local, state and federal agencies.

MID proposes to construct and operate a 95-megawatt (MW) generation plant called the Modesto Irrigation District Electric Generation Station (MEGS). The natural gas-fired simple cycle plant will consist of two General Electric LM 6000 SPRINT combustion turbines. Part of the proposed project includes the construction of approximately 0.25 miles of new 69-kV sub-transmission line and fiber optic cable, approximately 0.25 miles of new eight-inch natural gas supply line, and water supply and wastewater tap lines into existing City of Ripon lines located in South Stockton Avenue. **See Figure 3**.

PROJECT SITE AND LOCATION

The project is proposed to be located on a 12.25-acre site at South Stockton Avenue and Doak Boulevard in the City of Ripon, San Joaquin County, California, and will occupy approximately eight acres near the northern side of the project site.

The MEGS site, natural gas, sub-transmission line, and water pipeline are within the City of Ripon. **Project Description Figure 4** is a map of the MEGS site and the surrounding area, the transmission line route, and the water supply line. The proposed transmission lines, water pipelines, and gas pipelines are described in detail below.

WATER SUPPLY AND USE

As originally proposed, the MEGS Project would have required and average of 122 gallons per minute (gpm) of non-potable water supply with a peak demand of 244 gpm. However, the project has been amended to include a zero liquid discharge system (ZLD). This system will allow for recycling of waste streams for reuse within the facility and results in lower non-potable water demand. The average daily water demand for the MEGS with a ZLD system is now approximately 83 gpm and the approximate maximum daily water demand is 167 gpm. MEGS will use non-potable water from the City's non-potable water system for process make-up water.

Water for cooling, process water, and sanitary uses would be provided via new pipelines constructed by the City of Ripon. In April 2003 the City of Ripon began construction of a City improvement project for the extension of South Stockton Avenue and Doak Boulevard near the MEGS site. The City is installing potable and non-potable water lines, sanitary sewer lines, and a stormwater system within these streets (MID2003a). The City of Ripon anticipates that the improvements along South Stockton Avenue will be completed during the fall of 2003 (Data Request Response 58, MID2003l).

For the MEGS project, MID would construct potable and non-potable water supply, and stormwater discharge pipelines to interconnect to City utility services tap lines. These tap lines would be located adjacent to South Stockton Avenue and Doak Boulevard. Specifically, MID would construct a 3-inch diameter potable water pipeline, a 6-inch diameter non-potable water pipeline, an 8-inch diameter sanitary sewer line, two 10-inch diameter firewater pipelines, and two 12-inch diameter stormwater discharge pipelines.

TRANSMISSION

Approximately 0.25 miles of 69 kV subtransmission and fiber optics communications line will be required, running northeast from the proposed facility and ending at MID's Stockton Substation. The transmission line will be in the existing MID transmission easement that runs parallel to an existing private road.

The project will require the installation of approximately 7 new, 60-foot wood or metal poles and will replace the current 17kV poles which will then be under-built to the 69kV line. Two new bays at the Stockton Substation will be required to accommodate the new incoming circuits. The Substation has adequate space to accommodate the expansion.

NATURAL GAS

Natural gas will be the only fuel required for the facility. It will be delivered via a new, approximately 0.25-mile, 8-inch diameter pipeline. The pipeline would connect to an existing PG&E gas main north of the project site on South Stockton Avenue near the junction with 4th Street in Ripon. The new gas pipeline would be constructed within the South Stockton Avenue right-of-way.

The natural gas would be delivered by P G & E between 200 and 400 pounds per square inch gauge (psig). Three 1,000-hp gas compressors will be used to boost the natural gas pressure to 700 psig at the combustion turbine inlet to MEGS. Each compressor is able to supply the fuel gas consumed by a single combustion turbine. The additional compressor is intended to serve as a backup in the event one of the others is out of service.

The proposed new pipeline segment will be designed, constructed, and operated in accordance with national safety codes and the safety standards for new gas pipelines stated in the California Public Utility Commission's General Order (G.O.) 112-E.

COMBUSTION TURBINE GENERATOR

The plant will use two, 50.1 MW, GE LM6000 enhanced SPRINT combustion turbine generators (CTG) in a simple cycle configuration. The plant will have a nominal 95 MW net output after an on-site 5 MW plant parasitic load.

EMISSION CONTROLS

The MEGS project will be equipped with Best Available Control Technology (BACT) to control air pollutant emissions. These controls include a combustor water injection system to reduce the nitrogen oxide (NO_x) emissions from the CTG exhaust and a NO_x Selective Catalytic Reduction (SCR) to reduce emissions to 2.5 parts per million (ppm) at full load. The SCR system uses aqueous ammonia as a reagent for an ammonia injection system and an oxidation catalyst to maintain a CO emission limit of 6.0 ppm in all operating conditions. In addition, there will be a continuous emission monitoring system for the exhaust stack.

CONSTRUCTION SCHEDULE AND WORKFORCE

If approved by the Energy Commission, MID expects to begin construction of the project by the winter of 2003 and complete it by the fall of 2004. The Applicant anticipates beginning full-scale commercial operation to commence in the winter of 2004.

MID estimates the capital costs of the MEGS to be $79 million. MID expects to employ up to approximately 60 construction workers over the 9-month construction schedule. A permanent professional workforce of approximately 3 to 4 people will operate the plant. Construction payroll costs are estimated to be $8.9 million while annual operations payroll is expected to be $280,000 for three plant workers.

PROJECT DESCRIPTION - FIGURE 1

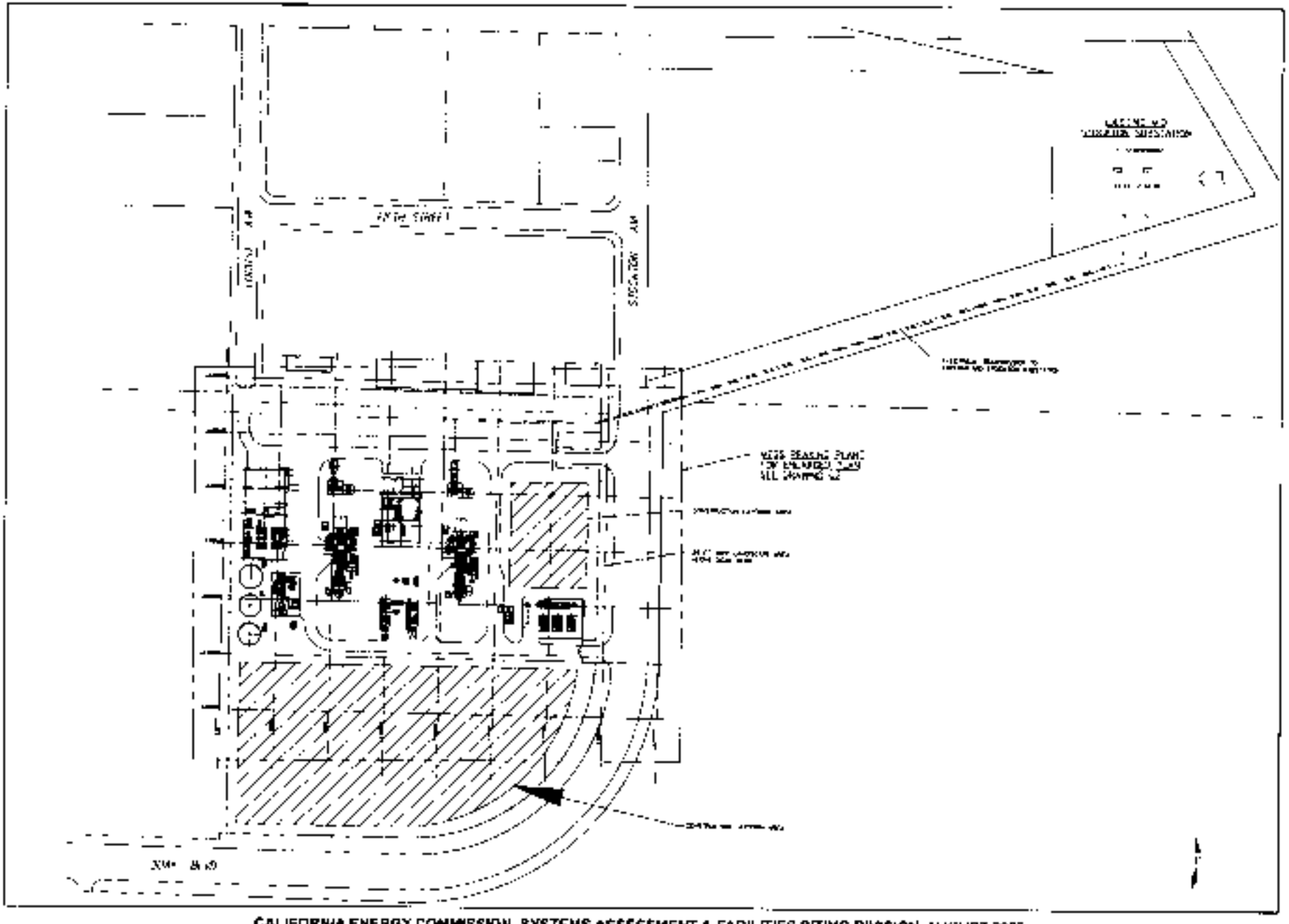
MID Electric Generation Station - Appearance of Developed Area & Transmission Line After Construction

CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, AUGUST 2003

SOURCE: AFC Figure 1.6

PROJECT DESCRIPTION - FIGURE 2

MID Electric Generation Station - Site Plan

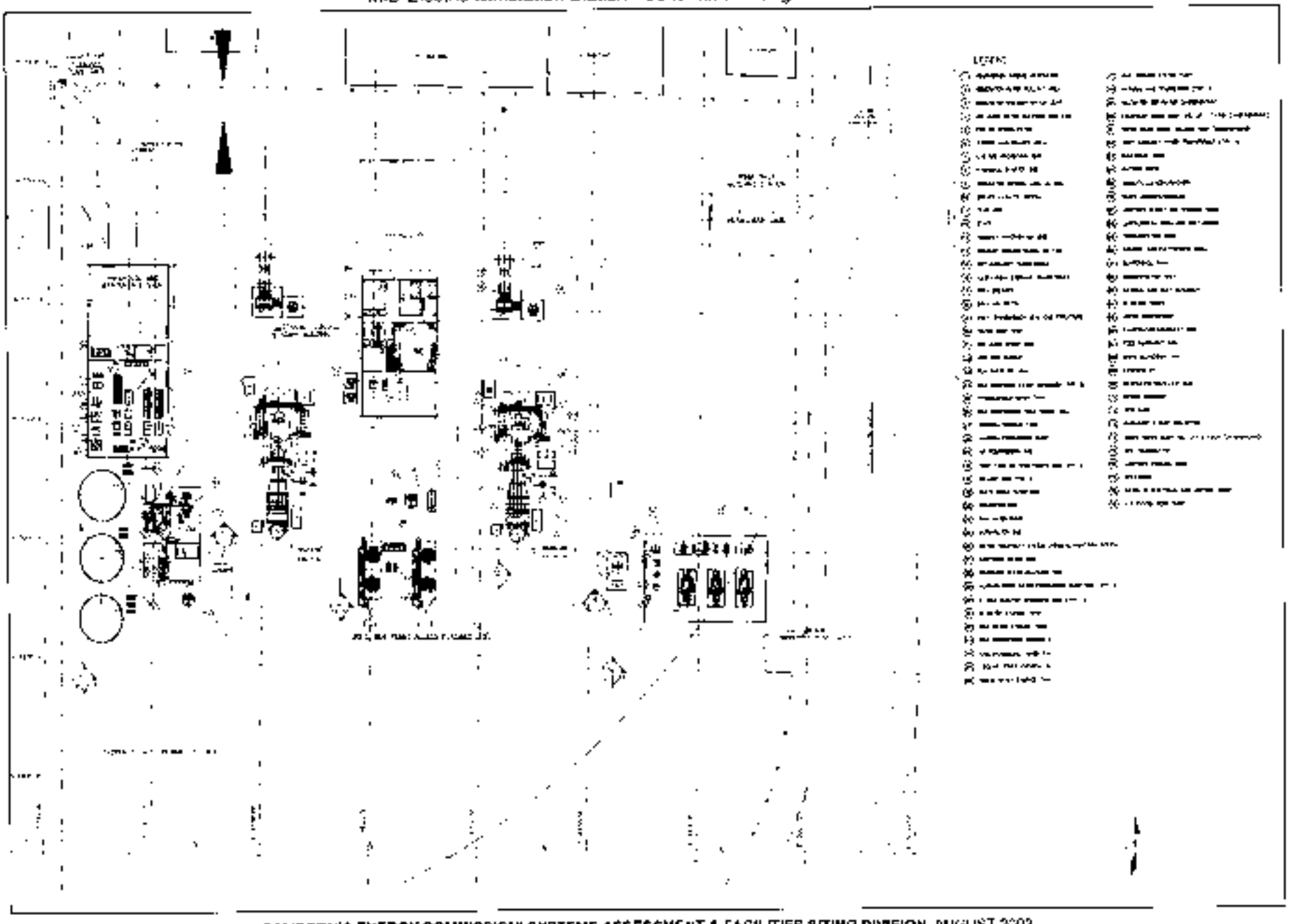


CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, AUGUST 2003

SOURCE: AFC Figure 1.2

PROJECT DESCRIPTION - FIGURE 3

MID Electric Generation Station - Schematic Arrangement of Plant

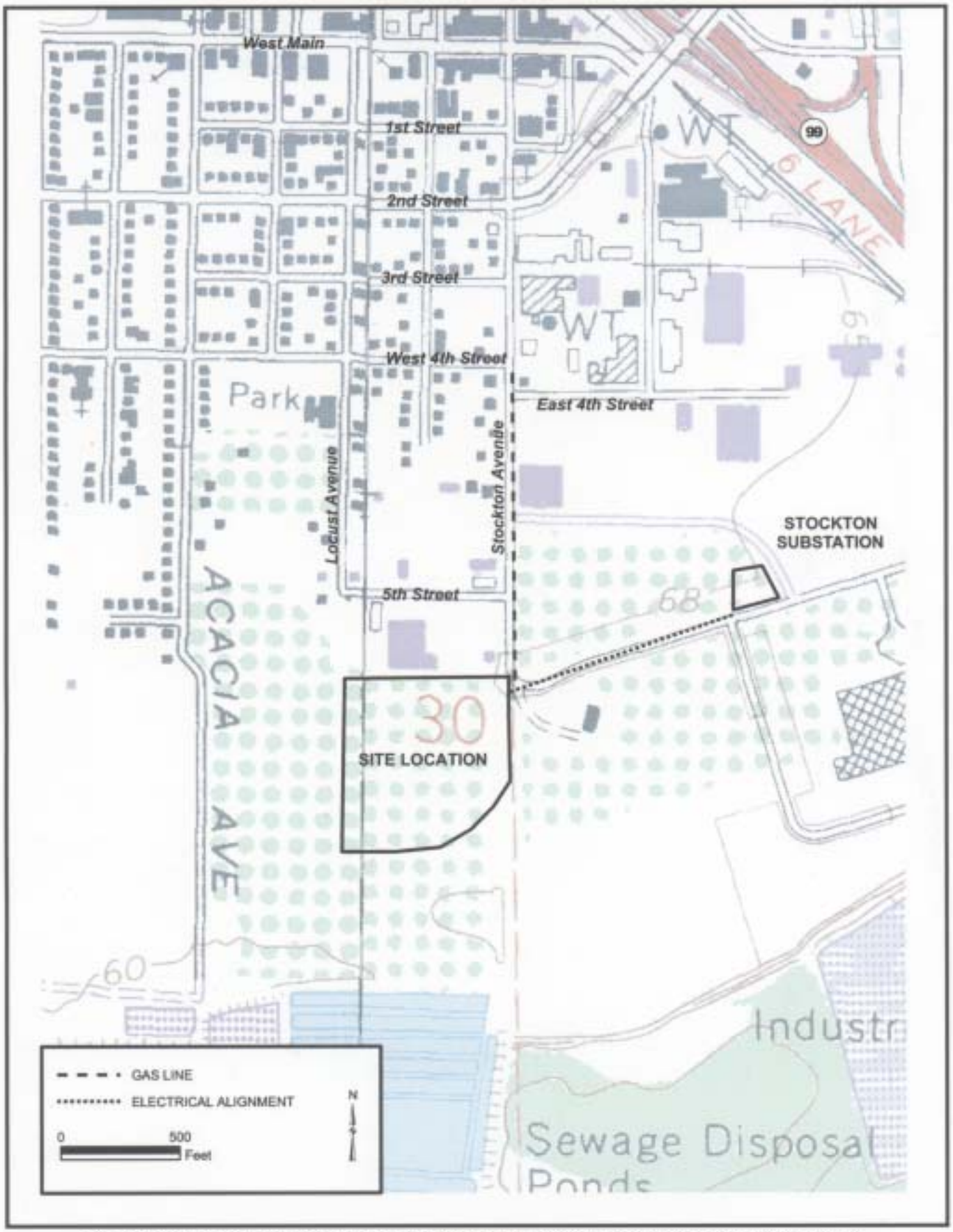


CALIFORNIA ENERGY COMMISSION| SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, AUGUST 2003

SOURCE AFC Figure 1.3

PROJECT DESCRIPTION - FIGURE 4

MID Electric Generation Station - MEGS Site and Linear Facilities Location



CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, AUGUST 2003

SOURCE: AFC Figure 1.4

AIR QUALITY

Testimony of William Walters and Lisa Blewitt

INTRODUCTION

This analysis evaluates the expected air quality impacts of the emissions of criteria air pollutants due to the construction and operation of the Modesto Irrigation District (MID or Applicant) Electric Generating Station (MEGS) Project, which will be located in the City of Ripon, San Joaquin County.

In carrying out the analysis, the California Energy Commission staff evaluated the major issues identified in the CEQA's Air Quality Checklist. The following sections address the questions included in the Checklist.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

Under the Warren-Alquist Act, Public Resources Code section 25541, staff is charged with evaluating whether the project as proposed would have a substantial adverse impact on the environment or public health and safety. Staff has identified the following LORS as potential significance criteria for evaluating whether the project as proposed would have a substantial adverse impact on air quality. For this project, the San Joaquin Valley Air Pollution Control District (SJVAPCD or District) will be responsible for ensuring that the project complies with all applicable LORS.

FEDERAL

The United States Environmental Protection Agency (USEPA) has issued a number of National Ambient Air Quality Standards (NAAQS). Pollutants regulated under these standards include ozone, nitrogen dioxide (NO_2), carbon monoxide (CO), respirable particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), and lead. Additional information regarding the NAAQS is provided in the Setting Section. The District and the California Air Resources Board (CARB) are the responsible agencies for providing attainment plans and meeting attainment with these standards.

Under the federal Clean Air Act new and modified major stationary sources of air pollution must undergo New Source Review (NSR) before commencing construction. NSR requirements vary depending on the attainment status of the area where the facility is to be located. Nonattainment area NSR is a permitting process for evaluation of those pollutants that violate federal ambient air quality standards. Conversely, Prevention of Significant Deterioration (PSD) requirements apply to areas that are in attainment of NAAQS. The nonattainment area NSR analysis has been delegated by the USEPA to the SJVAPCD. The USEPA determines the conformance with the PSD regulations. The PSD requirements apply only to those projects (known as major sources) that exceed 250 tons per year for any pollutant, or any new facility or stationary source category that is listed in 40 CFR Part 52.21(b)(1)(i)(a), and that emits 100 tons or more per year of any criteria pollutant. Since MEGS is not a steam electric plant and does not meet any other source category listed in 40 CFR Part 52.21(b)(1)(i)(a), it is subject to the 250-tpy PSD threshold. Emissions from MEGS are

proposed to be much less than 250-tpy; therefore PSD does not apply to the MEGS project.

Title V of the federal Clean Air Act requires states to implement and administer an operating permit program to ensure that large sources operate in compliance with all requirements specified in different air quality regulations that affect an individual project. Under the delegated SJVAPCD Title V program, administered under Rule 2520, the MEGS project will require a Title V permit. Title V does not impose substantive new requirements.

The MEGS is also subject to the federal New Source Performance Standards (NSPS) for the combustion turbines (40 CFR 60 Subpart GG). This regulation has pollutant emission requirements that are less stringent than those that will be required by NSR requirements for Best Available Control Technology (BACT).

The USEPA has reviewed and approved the San Joaquin Valley Air Pollution Control District's (SJVAPCD or District) regulations and has delegated to the SJVAPCD implementation of the federal NSR, Title V, and NSPS programs. The District implements these programs through its own rules and regulations, which are, at a minimum, as stringent as the federal regulations. In addition, the USEPA has also delegated to the District the authority to implement the federal Clean Air Act Title IV "acid rain" program. The Title IV regulation requirements will include obtaining a Title IV permit prior to operation, the installation of continuous emission monitors to monitor acid deposition precursor pollutants, and obtaining Title IV allowances for emissions of SO_x. Rule 2540 implements the federal Title IV program. Therefore, compliance with the District's rules and regulations should result in compliance with federal Title IV.

STATE

CARB has issued a number of California Ambient Air Quality Standards (CAAQS). These standards include pollutants not covered under the NAAQS and also require more stringent standards than provided under the NAAQS. Pollutants regulated under these standards include ozone, nitrogen dioxide (NO_2), carbon monoxide (CO), respirable particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), lead, sulfates, hydrogen sulfide, vinyl chloride, and visibility reducing particles. Additional information regarding the CAAQS is provided in the Setting Section.

The California State 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 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."

LOCAL

The proposed project is subject to San Joaquin Valley Air Pollution Control District Rules and Regulations, including the following:

Rule 2201 – New and Modified Stationary Source Review Rule

The main function of the District's New Source Review Rule is to allow for the issuance of Authorities to Construct, Permits to Operate, the application of Best Available Control Technology (BACT) to new or modified permit source and to require the new permit source to secure emission offsets.

Section 4.1 – Best Available Control Technology

BACT is defined as: a) the mandatory performance levels that are contained in any State Implementation Plan and that have been approved by EPA; b) the most stringent emission limitation or control technique that has been achieved in practice for a class of source; or c) any other emission limitation or control technique that the District's Air Pollution Control Officer (APCO) finds is technologically feasible and is cost effective. BACT is required from any new or modified emission unit that results in an emissions increase of 2.0 lb/day. However, Section 4.2.1 states that BACT is not required for CO emissions from any new or modified emissions unit if those sources emit less than 200,000 lb/year of CO. In the case of MEGS, BACT applies for NO_x, VOC, SO_2, and PM_{10} emissions from all point sources of the project.

Section 4.5 – Emission Offset Requirements

Emissions offsets for new or modified sources are required when those sources are equal to or exceed the following emission levels:

- Oxides of Nitrogen, NO_x – 20,000 lbs/year
- Volatile Organic Compounds, VOC – 20,000 lbs/year
- Carbon Monoxide, CO – 200,000 lbs/year
- PM_{10} – 29,200 lbs/year
- Sulfur Oxides, SO_x – 54,750 lbs/year

If constructed, the MEGS would exceed all of the above emission levels, except CO and SO_x.

Section 4.6 – Emission Offset Exemptions

Emissions offsets are not required for increases of CO in attainment areas, if the applicant demonstrates that the emissions increase will not cause or contribute to a violation of the ambient air quality standards, and that those emissions are consistent with Reasonable Further Progress.

Section 4.6.2 also exempts emergency equipment that is used exclusively as emergency standby equipment for electrical power generation that does not operate more than 200 hours per year for non-emergency purposes and is not used pursuant to voluntary arrangements with a power supplier to curtail power.

Section 4.13 – Additional Offset Requirements

Section 4.13.1 specifies that major sources (defined as those sources that emit greater than 25 tons of NO_x and VOC and 70 tons of PM_{10}) that are shutdown and thus generate an Emission Reduction Credit (ERC) may not be used as an offset for new

major source (like MEGS) unless those ERCs are included in an EPA-approved attainment plan. The current offset proposal does not include the use of ERCs from major stationary source shutdowns.

Section 4.13.2 states that offsets from another district may be used if the source of the offsets is within 50 miles of the proposed emission increase. The APCO must review the permit conditions and certify that such offsets meet the requirements of this rule and CH&SC Section 40709.6.

Section 4.13.3 allows for the use of interpollutant offsets (including precursors for PM_{10}) on a case-by-case basis, provided that the Applicant demonstrates that the emissions increase will not cause a violation of any ambient air quality standard. The ratio for interpollutant trading shall be based on an air quality analysis and shall be equal to or greater than the minimum offsetting requirement (the distance ratios) of this rule (Section 4.8). The current offset proposal includes a proposed SO_2 for PM_{10} interpollutant offset trade, which for CEQA impact mitigation is being proposed at a 1:1 ratio.

Section 4.13.4 requires Actual Emissions Reductions (AER) used as offsets to have occurred during the same calendar quarter as the emissions increases being offset. Exceptions to this rule (4.13.6 through 4.13.9) allow PM emission reductions that occurred from October through March to offset PM emissions occurring anytime during the year, for NO_x and VOC emission reductions that occurred from April through November to offset NO_x and VOC emissions occurring anytime during the year, and for CO emission reductions that occurred from November through February to offset CO emissions occurring anytime during the year.

Section 4.14 – Additional Source Requirements

Section 4.14.2 requires that a new source not cause, or make worse, the violation of an ambient air quality standard as demonstrated through analysis with air dispersion models.

Section 4.14.3 requires that the Applicant of a proposed new major source demonstrate to the satisfaction of the District that all major stationary sources subject to emission limitations that are owned or operated by the Applicant or any entity controlling or under common control with the Applicant in California, are in compliance or on a schedule for compliance with all applicable emission limitations and standards.

REGULATION VIII - FUGITIVE PM-10 PROHIBITIONS

Rule 8011 – General Requirements

Specifies the types of chemical stabilizing agents and dust suppressant materials that can (and cannot) be used to minimize fugitive dust from anthropogenic (man-made) sources. The rule also specifies test methods for determining compliance with visible dust emission (VDE) standards, stabilized surface conditions, soil moisture content, silt content for bulk materials, silt content for unpaved roads and unpaved vehicle/equipment traffic areas, and threshold friction velocity (TFV). Records shall be maintained only for those days that a control measure was implemented, and kept for

one year following project completion to demonstrate compliance. A fugitive dust management plan for unpaved roads and unpaved vehicle/equipment traffic areas is discussed as an alternative for Rule 8061 and Rule 8071.

Rule 8021 – Construction, Demolition, Excavation, Extraction and Other Earthmoving Activities

Requires fugitive dust emissions throughout construction activities (from pre-activity to active operations and during periods of inactivity) to comply with the conditions of a stabilized unpaved road surface and to not exceed an opacity limit of 20 percent, by means of water application, chemical dust suppressants, or constructing and maintaining wind barriers. A Dust Control Plan is also required and shall be submitted to the Air Pollution Control Officer (APCO) at least 30 days prior to the start of any construction activities on any site that include 40 acres or more of disturbed surface area, or will include moving more than 2,500 cubic yards per day of bulk materials on at least three days.

Rule 8031 – Bulk Materials

Limits the fugitive dust emissions from the outdoor handling, storage and transport of bulk materials. Requires fugitive dust emissions to comply with the conditions of a stabilized unpaved road surface and to not exceed an opacity limit of 20 percent. It specifies that bulk materials be transported using wetting agents, allow appropriate freeboard space in the vehicles, or be covered. It also requires that stored materials be covered or stabilized.

Rule 8041 – Carryout and Trackout

Limits carryout and trackout during construction, demolition, excavation, extraction, and other earthmoving activities (Rule 8021), from bulk materials handling (Rule 8031), and from unpaved vehicle and equipment traffic areas (Rule 8071) where carryout has occurred or may occur. Specifies acceptable (and unacceptable) methods for cleanup of carryout and trackout.

Rule 8051 – Open Areas

Requires fugitive dust emissions from any open area having 3.0 acres or more of disturbed surface area, that has remained undeveloped, unoccupied, unused, or vacant for more than seven day to comply with the conditions of a stabilized unpaved road surface and to not exceed an opacity limit of 20 percent, by means of water application, chemical dust suppressants, paving, applying and maintaining gravel, or planting vegetation.

Rule 8061 – Paved and Unpaved Roads

Specifies the width of paved shoulders on paved roads and guidelines for medians. Requires gravel, roadmix, paving, landscaping, watering, and/or the use of chemical dust suppressants on unpaved roadways to prevent exceeding an opacity limit of 20 percent. Exemptions to this rule include “any unpaved road segment with less than 75 vehicle trips for that day.”

Rule 8071 – Unpaved Vehicle/Equipment Traffic Areas

This rule intends to limit fugitive dust from unpaved vehicle and equipment traffic areas one acre or larger by using gravel, roadmix, paving, landscaping, watering, and/or the use of chemical dust suppressants to prevent exceeding an opacity limit of 20 percent. Exemptions to this rule include "unpaved vehicle and equipment traffic areas on any day which less than 75 vehicle trips occur."

Rule 8081 – Agricultural Sources

This rule intends to limit fugitive dust from off-field agricultural sources exempted from Rules 8031 (Bulk Materials), 8061 (Paved and Unpaved Roads), and 8071 (Unpaved Vehicle/Equipment Traffic Areas). Requires fugitive dust emissions to comply with the conditions of a stabilized surface and to not exceed an opacity limit of 20 percent.

SETTING

CLIMATOLOGY

The climate of the San Joaquin Valley 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 receives an average of about 12 inches of rain annually (MID 2003a, page 8.13-4).

Temperature, wind speed, and wind direction data have been collected at the Modesto Airport and the Stockton Airport, which are located approximately 12 miles southeast and 13 miles northwest of the project site, respectively. The predominant annual wind direction in the project area is from the north through west-northwest (northwestern quadrant). The northwest quadrant wind direction is particularly predominating during the spring, summer, and fall. The winds during the winter show two almost equal predominate directions, from the northwest quadrant and from the southeast quadrant (i.e. up and down valley directions). The wind speeds are generally higher during daylight hours and during the spring, summer, and fall.

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.

AMBIENT AIR QUALITY

The project is located within the jurisdiction of the San Joaquin Valley Air Pollution Control District (District). The applicable federal and California ambient air quality standards (AAQS) are presented in **AIR QUALITY Table 1**. As indicated in this table, the averaging times for the various air quality standards (the duration over which they are measured) range from 1-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 µg/m^3).

AIR QUALITY Table 1
Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	Federal Standard	California Standard
Ozone (O_3)	1 Hour	0.12 ppm (235 µg/m^3)	0.09 ppm (180 µg/m^3)
	8 Hour	0.08 ppm (160 µg/m^3)	—
Carbon Monoxide (CO)	8 Hour	9 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)
	1 Hour	35 ppm (40 mg/m^3)	20 ppm (23 mg/m^3)
Nitrogen Dioxide (NO_2)	Annual Average	0.053 ppm (100 µg/m^3)	—
	1 Hour	—	0.25 ppm (470 µg/m^3)
Sulfur Dioxide (SO_2)	Annual Average	0.03 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 (PM_{10})	24 Hour	150 µg/m^3	50 µg/m^3
	Annual Arithmetic Mean	50 µg/m^3	20 µg/m^3
Fine Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean	15 µg/m^3	12 µg/m^3
	24 Hour	65 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	—	0.010 ppm (26 µg/m^3)
Visibility Reducing Particulates	1 Observation (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 percent.

The USEPA, California Air Resource Board (CARB), 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 MEGS is located within the San Joaquin Valley Air Basin (SJVAB) and, as stated above, is under the jurisdiction of the San Joaquin Valley Air Pollution Control District. This area is designated as nonattainment for both the federal and state ozone and PM_{10} standards. **AIR QUALITY Table 2** summarizes federal and state attainment status of criteria pollutants for the SJVAB.

AIR QUALITY Table 2
Federal and State Attainment Status for the San Joaquin Valley Air Basin

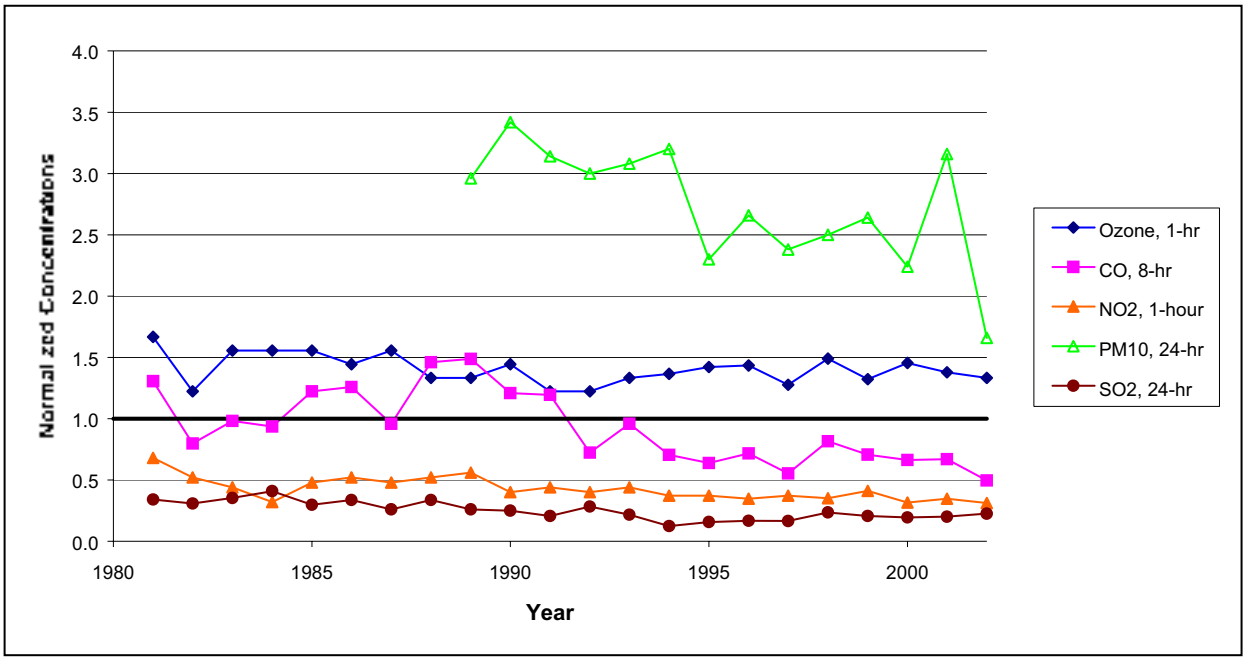
Pollutant	Attainment Status	
	Federal	State
Ozone – One hour	Severe Nonattainment [a]	Severe Nonattainment
CO	Unclassified/Attainment [b]	Attainment
NO_2	Unclassified/Attainment [b]	Attainment
SO_2	Unclassified	Attainment
PM_{10}	Serious Nonattainment	Nonattainment
$PM_{2.5}$	Designation to be Determined	Designation to be Determined
Lead	No Designation	Attainment

Source: 40 CFR 81 and SJVAPCD web site accessed January 2003 (www.valleyair.org/aqinfo/attainment.htm).
a. Region 9 News Release San Francisco, CA, "U.S. EPA Downgrades San Joaquin Valley Air," October 23, 2001 (Ozone).
b. Unclassified/Attainment – The attainment status for the subject pollutant is classified as either attainment or unclassified.

The project site is in San Joaquin County, within an industrial area in the City of Ripon, adjacent to the City's wastewater treatment plant. The monitoring station closest to the proposed project site is the Modesto 14th Street Station located approximately 9.6 miles southeast of the project site in Stanislaus County. This station monitors ambient concentrations of ozone, CO, NO_2, PM_{10}, and $PM_{2.5}$, and previously monitored SO_2 (1981-1988). Prior to the use of the Modesto 14th Street Station, the Modesto "I" Street Station measured PM_{10} (1989 to 1997) concentrations. Ambient concentrations of ozone, CO, NO_2, PM_{10}, and $PM_{2.5}$ are also measured at the Hazelton Street Station in Stockton, located approximately 16.5 miles northwest of the project site. The nearest monitoring station currently measuring SO_2 is at Bethel Island, about 23 miles northwest of the project site.

AIR QUALITY Figure 1 summarizes the historical air quality data for the project location, recorded at the Modesto 14th Street, Modesto "I" Street (PM_{10} 1989-1997 only) and Bethel Island (SO_2 1989-2002 only) air monitoring stations for ozone, PM_{10}, NO_2, CO, and SO_2. In **AIR QUALITY Figure 1**, the short term normalized concentrations are provided from 1981 to 2002. 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 (1) indicate 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
Modesto 14th Street and "I" Street (PM_{10} 1989-97), Bethel Island (SO_2 1989-2002)



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 1-hour average ozone concentration measured in Modesto was 0.119 ppm. Since the most stringent ambient air quality standard is the state standard of 0.09 ppm, the 1999 normalized concentration is 0.119/0.09 = 1.32.

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

Ozone

In the presence of ultraviolet radiation, both NO_x and VOC go through a number of complex chemical reactions to form ozone. **AIR QUALITY Table 3** summarizes the best representative ambient ozone data collected from the Modesto 14th Street monitoring station. The table includes the maximum 1-hour and 8-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 SJVAB is classified as a serious nonattainment area for both federal and state ozone standards.

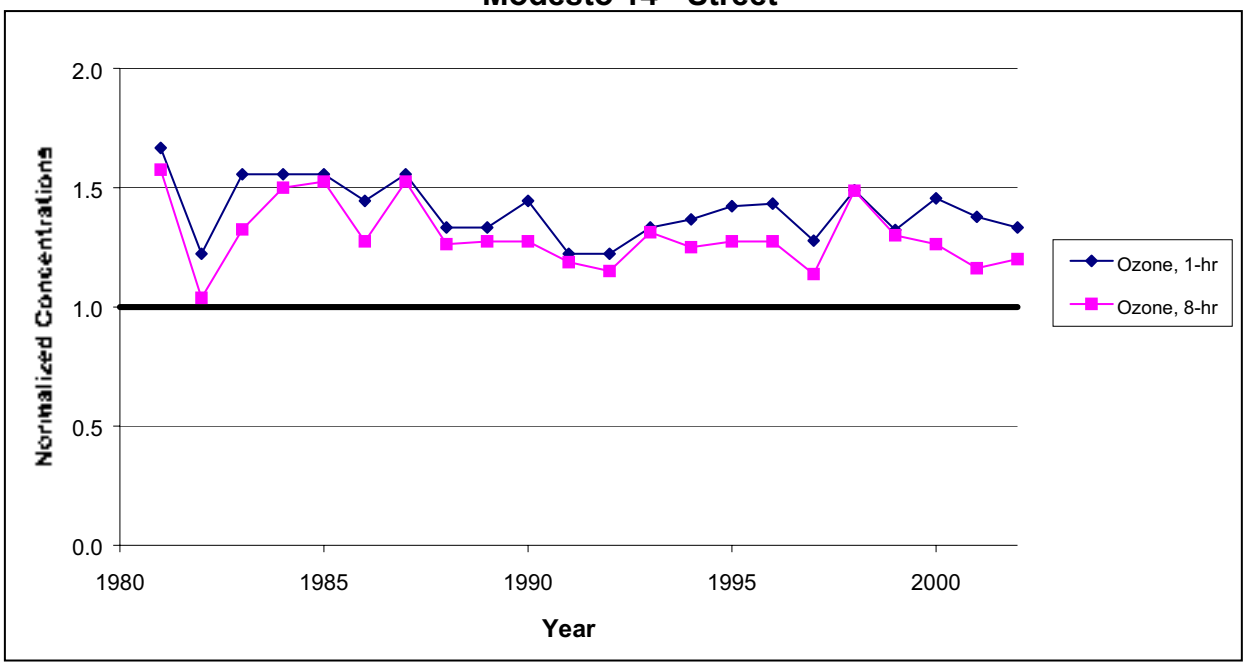
AIR QUALITY Table 3
Ozone Air Quality Summary, 1992-2002 (ppm)

Year	Modesto 14th Street					
	Days Above CAAQS 1-Hr	Month of Max. 1-Hr Avg.	Max. 1-Hr Avg.	Days Above NAAQS 8-Hr	Month of Max. 8-Hr Avg.	Max. 8-Hr Avg.
1992	10	JUN	0.110	2	SEP	0.092
1993	13	AUG	0.120	7	AUG	0.105
1994	24	JUN	0.123	9	AUG	0.100
1995	19	SEP	0.128	14	JUL	0.102
1996	24	AUG	0.129	15	JUL	0.102
1997	5	AUG	0.115	2	AUG	0.091
1998	24	AUG	0.134	13	AUG	0.119
1999	13	JUL	0.119	7	JUL	0.104
2000	7	AUG	0.131	4	AUG	0.101
2001	12	JUN	0.124	7	JUL	0.093
2002	14	AUG	0.120	6	AUG	0.096

California Ambient Air Quality Standard (CAAQS): 1-Hr, 0.09 ppm
National Ambient Air Quality Standard (NAAQS): 1-Hr, 0.12 ppm; 8-Hr, 0.08 ppm
Source: CARB web site, http://www.arb.ca.gov/adam/, Accessed April 2003.
Source: CARB Air Quality Data CD, December 2002 (1980-2001).

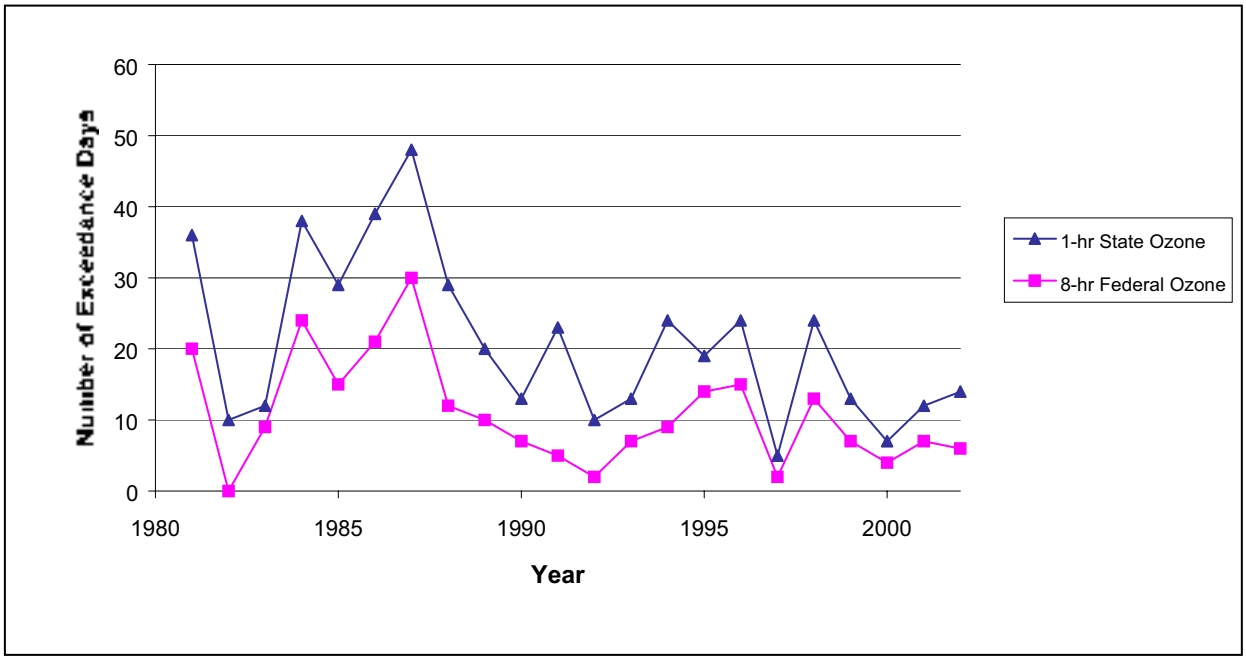
The year 1981 to 2002 trends for the maximum 1-hour and 8-hour ozone concentrations, referenced to the most stringent standard, and the number of days exceeding the California 1-hour standard and the Federal 8-hour standard for the Modesto 14th Street monitoring station are shown in **AIR QUALITY Figure 2** and **Figure 3**, respectively.

AIR QUALITY Figure 2
Normalized Ozone Air Quality Maximum Concentrations
Modesto 14th Street



A Normalized Concentration is the ratio of the highest measured concentration to the applicable most stringent air quality standard. The standard used for 1-hour ozone is the state standard of 0.09 ppm, and for 8-hr ozone is the national standard of 0.08 ppm.

AIR QUALITY Figure 3
Ozone – Number of Days Exceeding the Air Quality Standards
Modesto 14th Street



As these two figures show, the maximum 1-hour and 8-hour ozone concentration trends have been fairly static since 1988. The number of exceedances peaked in 1987; however, since 1990 the trend for the number of annual exceedances has been fairly static.

Inhalable Particulate Matter (PM_{10})

As **AIR QUALITY Table 4** indicates, the project area annually experiences a number of exceedances of the state and federal 24-hour PM_{10} standards. Annual Arithmetic Mean PM_{10} levels have been below the federal standard for over ten years but have continually been above the state standard. The SJVAB is considered to be in nonattainment of both federal and state PM_{10} standards.

AIR QUALITY Table 4
PM_{10} Air Quality Summary, 1992-2002 ($\sigma g/m^3$)

Year	Modesto "I" Street (1992-1997) and 14th Street (1998-2002)			
	Days * Above Daily CAAQS	Month of Max. Daily Avg.	Max. Daily Avg.	Annual Arithmetic Mean
1992	108	NOV	150	43
1993	95	NOV	154	42
1994	66	JAN	160	39
1995	84	NOV	115	37
1996	18	NOV	133	30
1997	41	JAN	119	33
1998	31	DEC	125	29
1999	84	OCT	132	38
2000	60	JAN	112	30
2001	57	JAN	158	35
2002	78	NOV	83	36

California Ambient Air Quality Standard: 24-Hr, 50 $\sigma g/m^3$; Annual Arithmetic, 20 $\sigma g/m^3$
National Ambient Air Quality Standard: 24-Hr, 150 $\sigma g/m^3$; Annual Arithmetic, 50 $\sigma g/m^3$
Source: CARB web site, http://www.arb.ca.gov/adam/, Accessed April 2003.
Source: CARB Air Quality Data CD, December 2002 (1980-2001).

* Days above the state standard (calculated): Because PM_{10} is monitored approximately once every six days, the potential number of exceedance days is calculated by multiplying the actual number of days of exceedances by six.

PM_{10} 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 NO_x, SO_x and VOC from turbines, and ammonia from NO_x control equipment, given the right meteorological conditions, can form particulate matters 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 NO_x emissions from combustion sources. The nitrate ion concentrations during the wintertime are a significant portion of the total PM_{10}, and should be even a higher contributor to particulate matter of less than 2.5 microns ($PM_{2.5}$). 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

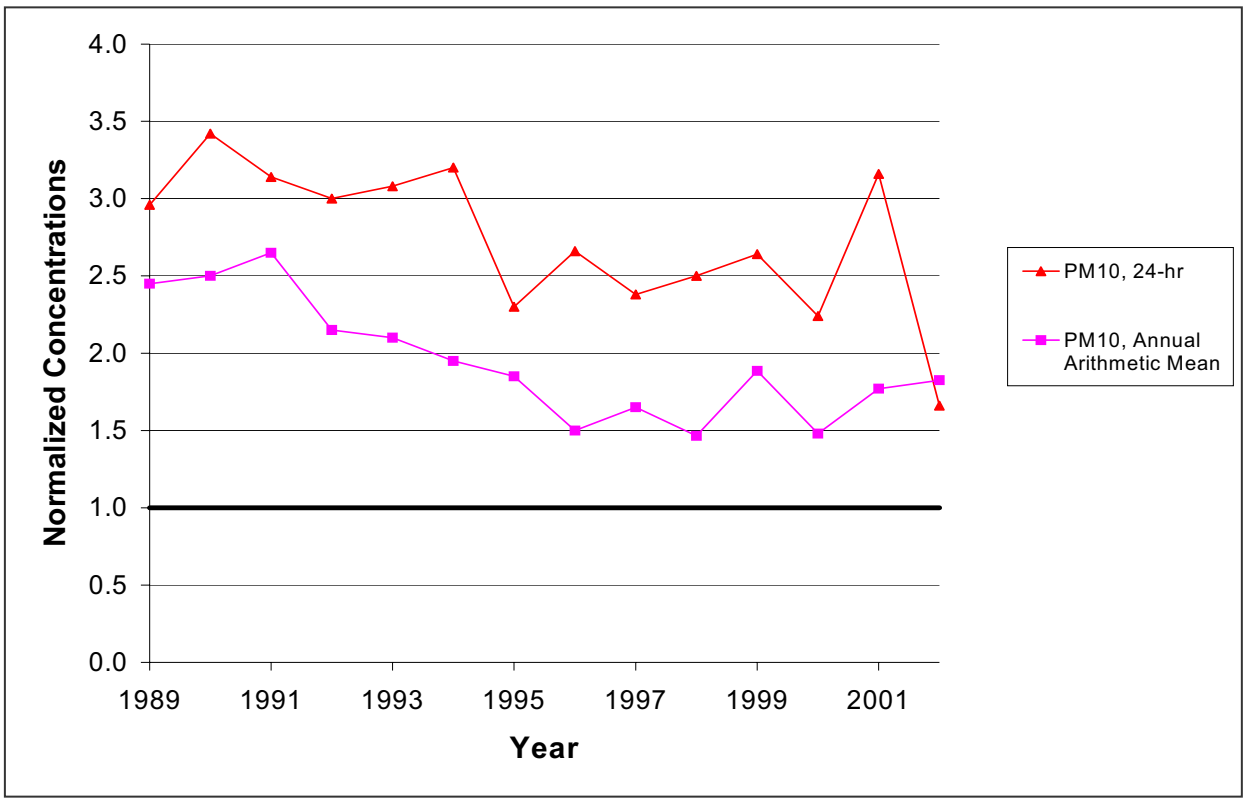
with the nitrate ion are taken into consideration, PM nitrate contributions to the total PM would even more significant.

As shown in **AIR QUALITY Table 4**, the highest PM concentrations are measured in the fall and winter. During wintertime high PM episodes, the contribution of ground level releases to ambient PM concentrations is disproportionately high.

The year 1989 to 2002 trends for the maximum 24-hour PM_{10} and Annual Arithmetic Mean PM_{10}, referenced to the most stringent standard, and the number of days exceeding the California 24-hour PM_{10} standard for the Modesto "I" Street (1989-1997) and 14th Street (1998-2002) monitoring stations are shown in **AIR QUALITY Figure 4** and **Figure 5**, respectively.

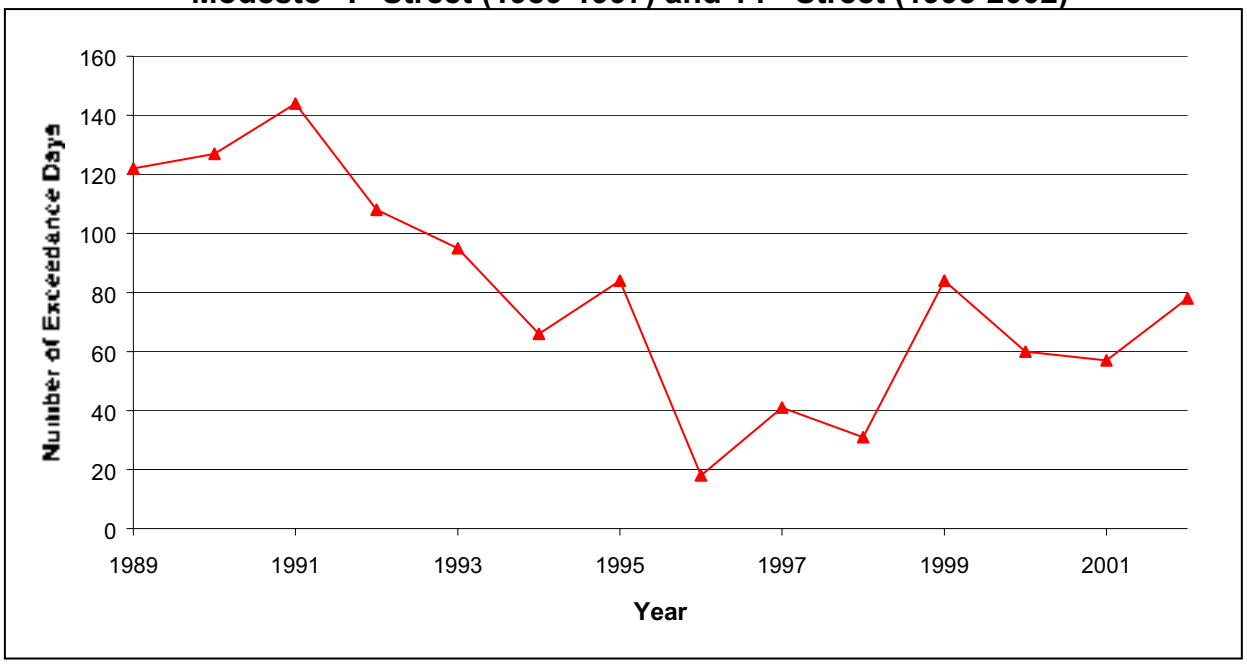
As the two figures show, there is an overall slight gradual downward trend for Annual Arithmetic Mean PM_{10} concentrations and the maximum 24-Hour PM_{10} concentrations (expect for 2001 which shows a peak). There has been an overall slight downward trend in the number of exceedances of the California 24-Hour Standard.

AIR QUALITY Figure 4
Normalized PM_{10} Air Quality Maximum Concentrations
Modesto "I" Street (1989-1997) and 14th Street (1998-2002)



A Normalized Concentration is the ratio of the highest measured concentration to the applicable most stringent air quality standard. The standard used for 24-hour PM_{10} is the state standard of 50 σg/m^3, and for the Annual Arithmetic Mean is the state standard of 20 σg/m^3.

AIR QUALITY Figure 5
PM_{10} 24-Hour – Number of Days Exceeding the State Air Quality Standard
Modesto "I" Street (1989-1997) and 14th Street (1998-2002)



Inhalable Particulate Matter ($PM_{2.5}$)

While the $PM_{2.5}$ NAAQS were issued in 1997, their implementation has been delayed. Currently, states have until February 15, 2004 to recommend to EPA which areas should be designated as attainment and nonattainment. USEPA will provide final designations by December 15, 2004. States have three years from the time of final designation (December 2007) to provide $PM_{2.5}$ attainment plans in a state implementation plan (SIP).

As shown in **AIR QUALITY Table 4**, the highest PM concentrations are measured in the fall and winter. The contribution of wood-smoke particles to the $PM_{2.5}$ concentrations may be even higher, considering that most of the wood-smoke particles are smaller than 2.5 microns.

As **AIR QUALITY Table 5** indicates, the 98th percentile 24-hour average $PM_{2.5}$ concentration levels have been declining from 1999-2002, but continue to remain slightly above the proposed NAAQS of 65 $\sigma g/m^3$ in Modesto. The 3-year average of annual arithmetic means (national annual average) has also been declining from 1999-2002, but continues to be above the NAAQS of 15 $\sigma g/m^3$ and the CAAQS of 12 $\sigma g/m^3$. Attainment for $PM_{2.5}$ will be based on the entire air basin. If attainment classification were to take effect now using current ambient air quality data, the SJVAB would be found to be in non-attainment.

AIR QUALITY Table 5
$PM_{2.5}$ Air Quality Summary, 1999-2002 ($\sigma g/m^3$)

Year	Modesto – 14th Street					
	Max. Daily Avg.	98th Percentile of Max. Daily Avg.	Days * Above 98th Percentile Daily NAAQS	3-Yr. Avg. 98th Percentile of Max. Daily Avg.	National Annual Avg.	3-Yr. Avg. of National Annual Avg.
1999	108	100.0	66	---	24.9	---
2000	77	71.0	30	---	18.7	---
2001	95	69.0	18	80	15.6	19.7
2002	83	69.0	18	70	18.7	17.7
	Stockton – Hazelton Street					
1999	101	79.0	30	---	19.8	---
2000	78	55.0	6	---	15.5	---
2001	76	58.0	12	64	13.9	16.4
2002	64	50.0	0	54	16.7	15.3

National Ambient Air Quality Standard: 3-Year Average - 98th Percentile of 24-Hr Avg. Conc., 65 $\sigma g/m^3$; 3-Year Average of Annual Arithmetic Mean (National Annual Average), 15 $\sigma g/m^3$
California Ambient Air Quality Standard: Annual Average, 12 $\sigma g/m^3$
Source: CARB web site, http://www.arb.ca.gov/adam/, Accessed April 2003.
Source: CARB Air Quality Data CD, December 2002 (1980-2001).

* Days above the national standard (calculated): Because $PM_{2.5}$ is monitored approximately once every six days, the potential number of exceedence days is calculated by multiplying the actual number of days of exceedances by six.

Carbon Monoxide (CO)

As **AIR QUALITY Table 6** 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 source of the CO emissions. High levels of CO emissions can also be generated from fireplaces and wood-burning stoves. At the Modesto 14th Street air monitoring station there have been no recorded exceedances of California Ambient Air Quality Standards or National Ambient Air Quality Standards since at least 1992 for the one-hour and the eight-hour CO standards (see **AIR QUALITY Table 6**).

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 morning and afternoon. Carbon monoxide concentrations in San Joaquin 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.

AIR QUALITY Table 6
CO Air Quality Summary, 1992-2002 (ppm)

Year	Modesto 14th Street		
	Maximum 1-Hr Average	Month of Max. 8-Hr Average	Maximum 8-Hr Average
1992	10.0	NOV	6.50
1993	11.0	NOV	8.63
1994	9.5	JAN	6.35
1995	11.4	NOV	5.74
1996	9.2	NOV	6.46
1997	7.1	NOV	4.99
1998	9.4	DEC	7.34
1999	11.4	DEC	6.36
2000	8.0	DEC	5.97
2001	7.8	JAN	6.03
2002	---	FEB	4.46

California Ambient Air Quality Standard: 1-Hr, 20 ppm; 8-Hr, 9 ppm
National Ambient Air Quality Standard: 1-Hr, 35 ppm; 8-Hr, 9 ppm
Source: CARB web site, http://www.arb.ca.gov/adam/, Accessed April 2003.
Source: CARB Air Quality Data CD, December 2002 (1980-2001).

Nitrogen Dioxide (NO_2)

As shown in **AIR QUALITY Table 7** the maximum one-hour and annual concentrations of NO_2 at the Modesto 14th Street Station are lower than California and National Ambient Air Quality Standards. Approximately 75 to 90 percent of the NO_x 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 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) disperse pollutants, preventing the accumulation of NO_2 to levels approaching the 1-hour ambient air quality standard. The formation of NO_2 in the summer in the presence of ozone is according to the following reaction.

$$NO + O_3 \Downarrow NO_2 + O_2$$

In urban areas, ozone concentration levels are typically high. These levels will 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 NO_x emissions) ozone concentrations can remain relatively high.

AIR QUALITY Table 7
NO_2 Air Quality Summary, 1992-2002 (ppm)

Year	Modesto 14th Street		
	Month of Max. 1-Hr Average	Maximum 1-Hr Average	Maximum Annual Average
1992	OCT	0.100	0.022
1993	NOV	0.110	0.023
1994	OCT	0.093	0.023
1995	SEP	0.093	0.022
1996	NOV	0.087	0.022
1997	SEP	0.093	0.021
1998	OCT	0.088	---
1999	OCT	0.103	0.022
2000	SEP	0.079	0.019
2001	NOV	0.087	0.018
2002	OCT	0.078	0.017

California 1-Hr Ambient Air Quality Standard: 0.25 ppm
National Annual Ambient Air Quality Standard: 0.053 ppm
Source: CARB web site, http://www.arb.ca.gov/adam/, Accessed April 2003.
Source: CARB Air Quality Data CD, December 2002 (1980-2001).

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 lignite (a type of coal) emit very large amounts of SO_2 when combusted.

Sources of SO_2 emissions within the SJVAB come from every economic sector and include a wide variety of fuels; gaseous, liquid and solid. The SJVAB is designated attainment for all the SO_2 state and federal ambient air quality standards. **AIR QUALITY Table 8** shows the historic 1-hour, 24-hour and annual average SO_2 concentrations collected from the Contra Costa County Bethel Island Road Station, approximately 23 miles from the project site. As **AIR QUALITY Table 8** shows, concentrations of SO_2 are far below the state and federal SO_2 ambient air quality standards.

AIR QUALITY Table 8
SO_2 Air Quality Summary, 1992-2002 (ppm)

Year	Bethel Island Road, Contra Costa County			
	Maximum 1-Hr Avg.	Month of Max. 24-Hr Avg.	Maximum 24-Hr Avg.	Annual Average
1992	0.030	JUN	0.0113	0.0009
1993	0.020	APR	0.0087	0.0005
1994	0.019	MAY	0.0050	0.0012
1995	0.015	JUL	0.0063	0.0010
1996	0.014	AUG	0.0067	0.0014
1997	0.015	AUG	0.0066	0.0020
1998	0.028	SEP	0.0094	0.0018
1999	0.029	SEP	0.0083	0.0014
2000	0.018	JUN	0.0078	0.0016
2001	0.015	MAY	0.0080	0.0021
2002	---	JUL	0.009	0.002

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: CARB web site, http://www.arb.ca.gov/adam/, Accessed April 2003.
Source: CARB Air Quality Data CD, December 2002 (1980-2001).

Visibility

The conditions of visibility in the region of the project site are dependent upon the relative humidity natural to the area 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 will decrease.

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

Summary

In summary, staff recommends the background ambient air concentrations in **AIR QUALITY Table 9** for the modeling and impacts analysis. The maximum criteria pollutant concentration from the past three years (2000-2002) from the following representative monitoring stations are used to determine the background values: Modesto 14th Street and Bethel Island Road.

The project site is located within the City of Ripon in an industrial area, adjacent to the City's wastewater treatment plant, approximately 0.5 miles southwest of Highway 99, at the intersection of South Stockton Avenue and Doak Boulevard. Where possible, the recommended background concentrations come from nearby monitoring stations with similar characteristics. The monitoring stations in Modesto are considered to be conservative as they are located within larger urban areas and are a little further down

the valley than the City of Ripon. The recommended ozone, NO_2, PM_{10}, and CO background concentrations are from the Modesto 14th Street monitoring station. The recommended SO_2 background concentration is from the Bethel Island Road monitoring station in Contra Costa County, which is the nearest representative monitoring station to the project site.

AIR QUALITY Table 9
Staff Recommended Background Concentrations for MEGS (ppm)

Pollutant	Averaging Time	2000	2001	2002	Most Restrictive Ambient Air Quality Standard
Ozone	1 hour	0.131	0.124	0.120	0.09
	8 hour	0.101	0.093	0.096	0.08
PM_{10} ($\mu g/m^3$)	24 hours	112	**158**	83	50
	Annual Arithmetic Mean	35	35	**36**	20
$PM_{2.5}$ ($\mu g/m^3$)	24 hours	78	**95**	83	65
	Annual Arithmetic Mean	18.7	15.6	**18.7**	12
NO_2	1 hour	0.079	**0.087**	0.078	0.25
	Annual	**0.019**	0.018	0.017	0.053
CO	1 hour	**8.0**	7.8	---	20
	8 hour	5.97	**6.03**	4.46	9
SO_2	1 hour	**0.018**	0.015	---	0.25
	3 hour [b]	**0.016**	0.014	---	0.5
	24 hours	0.008	0.008	**0.009**	0.04
	Annual	0.002	0.002	**0.002**	0.03

Note(s):
a. Bold values are the background concentrations used throughout the following air quality analysis.
b. 3-hour SO_2 value is assumed to equal 90% of 1-hour SO_2 value.

PROJECT DESCRIPTION

This section describes the project design and criteria pollutant control devices as described in the SPPE application (MID 2003a), and data request responses filed on June 5, 2003 (MID 2003b).

PROPOSED EQUIPMENT

The major equipment proposed in the application include the following (MID 2003a):

- Two General Electric (GE) LM 6000 SPRINT combustion turbine generators (CTGs), each rated at 50 MW (nominal at site design conditions). Each CTG would be equipped with water injection and inlet air chilling (described below).
- A continuous emission monitoring (CEM) system for NO_x, CO, and oxygen.
- Two packaged chilled water systems, one for each turbine, which include up to a 1,800-ton electric chiller, dual-chilled water pumps, dual condenser water pumps, 2-cell pre-fabricated, pre-engineered cooling tower, motor control center, and chiller controls.
- Three electrically driven reciprocating natural gas compressors with nominal capacity of 12 MSCFD, 700 psig, and 1,000 HP each.

- Zero Liquid Discharge (ZLD) system consisting of an electrically heated spray dryer with baghouse (Option 1 – See description under Facility Operation) .

FACILITY OPERATION

Modesto Irrigation District has proposed to develop an Electric Generating Station (MEGS) within a 12.25-acre parcel located in an industrial area of the City of Ripon in San Joaquin County, California. The project site is located adjacent to the City's wastewater treatment plant, approximately 0.25 miles from the existing MID Stockton substation, at the intersection of South Stockton Avenue and Doak Boulevard. The power plant site would occupy approximately 6 acres near the northeastern side of the 12.25-acre parcel. An additional 2 acres would be required for primary access and emergency access to the plant and subtransmission lines. The remaining 4.25 acres would be available for sale, equipment storage, or future development after construction is completed.

The MEGS would use two stationary, natural gas-fired combustion turbines for power production. Each combustion turbine generator (CTG) would generate an average of 50 MW at base load under average ambient conditions. Each CTG would have water injection to minimize NO_x emissions, and a packaged chilled water system to maximize CTG performance during periods of high ambient temperatures (greater than 55°F). A selective catalytic reduction (SCR) emission control system, using aqueous ammonia in the presence of catalyst, would also be used to reduce the NO_x concentration in the exhaust gases. An oxidation (CO) catalyst would be installed upstream of the SCR system to control carbon monoxide (CO) emissions. The total net generating capacity of the power plant would be 95 MW (100 MW minus 5 MW for plant parasitic power) with an expected overall annual availability of approximately 100 percent.

The MEGS design includes CTG inlet air water chillers with associated packaged cooling towers (one for each CTG). The chiller cooling towers would each have 2-cells and use untreated non-potable water provided by the City of Ripon's non-potable water system. As mentioned above, the cooling tower equipment would only be operated when the ambient temperature is greater than 55°F. The cooling tower blowdown would be routed to the ZLD system.

Three ZLD technologies have been proposed to achieve the goal of enabling MEGS to be a zero-liquid discharge facility. The final option will be determined as part of the final project design. These ZLD options are described below (MID 2003d):

- Option 1 – ZLD Brine Concentrator/Spray Dryer: Plant wastewater will be concentrated and evaporated using a brine concentrator process. Recovered distillate (pure water) will be sent to a raw water storage tank for reuse in the plant makeup water system. The small amount of highly concentrated brine solution, which represents the only process wastewater stream not reclaimed for reuse, will be sent to an electrically heated spray dryer system where it will be evaporated leaving a dry solid suitable for landfill disposal.
- Option 2 – ZLD High Efficiency Reverse Osmosis/Crystallizer: Plant wastewater will be treated using a conventional water softener followed by a high efficiency reverse osmosis (RO) system, followed by a crystallizer. Less process wastewater would be

treated in the final ZLD equipment due to the enhanced efficiency of the RO process. The small amount of highly concentrated brine waste from the crystallizer will be trucked offsite for treatment and disposal.

- Option 3 – ZLD High Efficiency Reverse Osmosis/Crystallizer/Filter Press: This option is identical to Option 2 except that the crystallizer effluent is further process in a conventional filter press to produce a low moisture salt cake. Water recovered from the filter press is returned to the crystallizer for processing. The final filter cake would be trucked offsite for landfill disposal.

For this air quality analysis, ZLD Option 1, using a brine concentrator and spray dryer, has been selected. It is considered to be a worst-case scenario for air quality as it is the only option with air emissions (from the spray dryer vent) (MID 2003d). ZLD Options 2 and 3 do not have any air emission sources.

EMISSION CONTROLS

The exclusive use of pipeline-quality natural gas, a relatively clean-burning fuel, would limit the formation of VOC, PM_{10}, and SO_2 emissions. Natural gas contains very little noncombustible gas or solid residues and a small amount of reduced sulfur compounds including mercaptan. There would be no distillate fuel oil firing at MEGS.

The CTGS will use water injection technology to minimize NO_x emissions from the CTG exhaust. Selective catalytic reduction (SCR) systems in the exhaust ductwork will use aqueous ammonia to further reduce NO_x emissions to 2.5 parts per million by volume, dry (ppmvd) at 15 percent oxygen (O_2) at full load on a one-hour average basis. An air dilution system will be used to maintain the exhaust temperature in the appropriate range for the SCR system (MID 2003a, page 2-5). Ammonia slip would be limited to 10 ppmvd at 15 percent O_2 from the gas turbines (MID 2003a, page 8.1-27). Carbon monoxide (CO) would be controlled upstream of the SCR system by an oxidation catalyst, and would be limited to no greater than 6 ppmvd at 15 percent O_2 (excluding startups and shutdowns). VOC emissions leaving the stacks would be limited to 2.0 ppmvd at 15 percent O_2 with the use of the proposed gas turbine combustors. Particulate emissions would be controlled using natural gas as the sole fuel for the CTGs.

Two 85-foot-tall, exhaust stacks would release the CTG exhaust gas into the atmosphere. Continuous emission monitors (CEMs) would be installed on these stacks to monitor NO_x, CO, and oxygen concentrations 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.

Emissions from the cooling towers are estimated based on the maximum cooling water Total Dissolved Solid (TDS) levels. The cooling towers are exempt from permitting and are noted to have a controlled drift emission rate of 0.001% of the recirculating water flow (MID 2003a, Attachment 8.1B Table 8.1B-2).

The ZLD system spray dryer has a baghouse as part of its integral design for the collection of the separated solids. The baghouse would provide a high efficiency control of the PM_{10} emissions from the spray drying process.

ESTIMATED PROJECT EMISSIONS

The proposed project will generate air emissions during the construction, operation, and commissioning of the facility. The following is a summary of the air emissions from these sources:

Criteria Pollutants Generated From Construction Activities

The MEGS will include two 50 MW natural gas-fired, simple-cycle turbine generators, a spray dryer for the ZLD system, two packaged chilled water systems, three reciprocating natural gas compressors, and the following linear and ancillary facilities:

- Approximately 0.25 miles of 69-kV subtransmission line and fiber optic cable.
- Approximately 0.25 miles of 8-inch diameter natural gas supply pipeline.
- Water pipelines of varying length, extending no more than 30 feet from the project site, for potable water supply (3-inch), non-potable water supply (6-inch), industrial wastewater discharge (6-inch), sanitary sewer discharge (8-inch), and firewater supply (2 x 10-inch). These pipelines will interconnect to the respective utility service tap lines, currently being installed under South Stockton Avenue and Doak Boulevard by the City of Ripon as part of a City improvement project (MID 2003a, page 2-6).

Construction activities for the MEGS project, both on-site and off-site, would generate air emissions from earth moving activities and construction equipment. Construction is expected to last approximately 10 months. Off-site construction of the natural gas pipeline, water pipeline and subtransmission line interconnect is expected to last one (1) month.

Project Site

The power plant alone would take approximately 9 months to construct; however, the applicant's air quality analysis has assumed 10 months (MID 2003b, Data Response 3). The power plant project construction consists of five main phases: 1) site preparation, 2) foundation work, 3) installation of major equipment, 4) construction/installation of major structures, and 5) startup and commissioning. Fugitive dust emissions during the construction of the project result from dust entrained during site preparation and grading/excavation at the construction site, during onsite travel on paved and unpaved surfaces, and during aggregate and soil loading and unloading operations, as well as, wind erosion of areas disturbed during construction activities. The largest fugitive dust emissions are generated during site preparation activities, where work such as clearing, grading, excavation of footings and foundations, and backfilling operations occur. These types of activities require the use of large earth moving equipment, which generate combustion emissions, along with creating fugitive dust emissions. Combustion emission during the construction of the project result from exhaust sources including 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 and trucks used by workers to commute to and from the construction site.

Applicant estimates for the highest emissions during construction are based on the first month of construction, during site preparation, and are provided in **AIR QUALITY Table 10**. Annual on-site construction heavy equipment exhaust and fugitive dust emissions based on the average equipment mix during the 10-month construction period are summarized in **AIR QUALITY Table 11**.

AIR QUALITY Table 10
Maximum Daily Emissions During On-Site Construction
(Month 1; Maximum Dust Emissions), lbs/day

	NO_x	CO	VOC	SO_x	PM_{10}
On-Site					
Construction Equipment[a]	114.93	74.98	10.67	0.12 [a]	5.96
Fugitive Dust	---	---	---	---	36.80
Off-site					
Worker Travel	6.81	81.37	6.50	0.00	0.14
Truck Deliveries	19.61	12.27	1.76	0.81	1.10
Total Emissions	141.35	168.62	18.93	0.93	44.00

From MID 2003e.
Notes:
a. Heavy diesel construction equipment emission factors are based on the EPA Nonroad model engine emission factors (USEPA 2002) and use of CARB ultra low-sulfur fuel (15 ppm sulfur).

AIR QUALITY Table 11
Annual Emissions During On-Site Construction, tons/year

	NO_x	CO	VOC	SO_x	PM_{10}
On-Site					
Construction Equipment	9.74	9.10	1.43	0.01	0.64
Fugitive Dust	---	---	---	---	2.35
Off-site					
Worker Travel	0.50	5.92	0.47	0.00	0.01
Truck Deliveries	0.98	0.61	0.09	0.04	0.06
Total Emissions	11.22	15.64	1.99	0.05	3.06

From MID 2003e.

Linear Facilities

The linear facilities would include the natural gas pipeline, water pipeline and the 69-kV subtransmission/fiber optic line. The construction period for each pipeline/transmission line route is expected to be approximately one (1) month.

The natural gas pipeline would connect to the Pacific Gas & Electric Company's (PG&E's) existing main pipeline located approximately 0.25 miles north of the project site on South Stockton Avenue at 4th Street. The pipeline would run north along Stockton Avenue for approximately 0.25 miles to East 4th Street. Open trench construction would be performed in approximately 500-foot long sections over a short duration to minimize fugitive dust and construction equipment combustion emissions.

The water pipeline consists of several pipelines of varying length, extending no more than 30 feet from the project site. These pipelines will connect to main lines located under South Stockton Avenue, east of the project site, which are currently being constructed by the City of Ripon as part of its overall infrastructure improvements to the area. All cooling and process water for the MEGS project will be provided by the City of Ripon's non-potable water system. Potable water will be provided from the potable

water main under Stockton Avenue. Process and cooling wastewater from the project will be routed to the proposed ZLD system for recycle; sanitary wastewater will be discharged to the City's sanitary disposal; and stormwater will be discharged to the City's industrial treatment system.

The 69-kV subtransmission line would be approximately 0.25 miles long and would interconnect from the project site to the existing MID Stockton Substation. The subtransmission line will exit MEGS, travel east across South Stockton Avenue, run parallel to the private road that leads to the Fox River Paper Plant, until it reaches the Stockton Substation. The line may be on the north or south side of this private road, depending on the arrangements that are made with the landowner. A fiber optic communications cable will also be installed. The proposed subtransmission line/fiber optic alignment will require the installation of approximately 7 new wood or metal poles.

AIR QUALITY Table 12 shows maximum daily emissions expected from the construction of the natural gas pipeline, water supply pipeline and the subtransmission line interconnect.

AIR QUALITY Table 12
Maximum Daily Emissions During Pipeline and Subtransmission Line Interconnect Construction, lbs/day

	NO_x	CO	VOC	SO_x	PM_{10}
Natural Gas Pipeline					
On-Site					
Construction Equipment	55.81	17.93	4.14	1.89	2.77
Fugitive Dust	---	---	---	---	4.66
Off-site					
Truck Deliveries	18.56	11.61	1.67	0.77	1.04
Worker Travel	3.71	44.38	3.54	0.00	0.08
Total Emissions	78.08	73.92	9.35	2.66	8.55
Subtransmission Line Interconnect					
On-Site					
Construction Equipment	76.13	15.58	4.83	2.20	3.47
Fugitive Dust	---	---	---	---	1.14
Off-site					
Truck Deliveries	46.40	29.03	4.17	1.92	2.61
Worker Travel	3.09	36.99	2.95	0.00	0.06
Total Emissions	125.62	81.60	11.95	4.12	7.28

From SPPE (MID 2003a), Table 8.1F-3 and Attachment 8.1F-1.

Criteria Pollutants Generated From Project Operation

Air emissions would be generated from operating the major project components. The emission rates for the combustion gas turbines, cooling towers and spray dryer are provided in **AIR QUALITY Table 13.**

AIR QUALITY Table 13
Maximum Pollutant Emission Rates, lb/hr

Pollutant	Each Gas Turbine [a]	Each Cooling Tower	Spray Dryer
NO_x	4.53	---	---
CO	6.62	---	---
VOC	1.26	---	---
PM_{10}	3.00	0.03	0.05
SO_2	0.51 [b]	---	---
NH_3	6.71	---	---

SPPE (MID 2003a) Tables 8.1-17, 8.1B-1 and 8.1B-2; Supplement A (MID 2003d) Table 8.1B-2.1.
Note(s):
a. Emission rates shown reflect the highest value at any operating load. For NOx, CO, and VOC, values exclude startups and shutdowns
b. SO_2 emissions are based on fuel sulfur content of 0.36 grains/100 scf, which is a conservative estimate based on hourly sulfur measurements taken at the PG&E Burney Compressor Station for the period December 18, 2000 through December 17, 2001 (MID 2003a, Figure 8.1B-9).

Expected event emission rates during startup and shutdown events are summarized in **AIR QUALITY Table 14**.

Air Quality Table 14
Criteria Pollutant Emission Rates
During Startup and Shutdown per Turbine

Pollutant	Maximum, lb/hr	Maximum, lb/start [b]
NO_x [a]	20	20

From SPPE (MID 2003a) Tables 8.1-19 and 8.1B-7; Data Response 21 (MID 2003) Attachment AQ-21.
Note(s):
a. Estimated based on CEMS data collected at the Gilroy Peaker Plant during April 2002.
b. Maximum emissions based on 1-hour startup.
c. Emissions for pollutants not shown during startups and shutdowns are assumed to be equal to the maximum hourly emissions during baseload facility operation.

Based on data from the Gilroy, Henrietta, and Hanford peaking power plants, the applicant does not expect that the CO or VOC emissions will be higher than maximum normal operating levels during startup/shutdown (MID 2003b, Data Response #19).

AIR QUALITY Table 15 summarizes the maximum (worst-case) estimated hourly levels of the different criteria pollutants from the turbine and cooling tower. To assess worst-case hourly emissions, the following assumptions were made:

Maximum Hourly Emissions:

For NO_x:

- Two turbines operate in startup mode.

For CO, VOC, SO_2, PM_{10} and NH_3:

- Two turbines operate at full load.
- Cooling towers and spray dryer operate at maximum output.

Air Quality Table 15
MEGS Worst-Case Hourly Emissions

	Maximum Hourly, lb/hr					
	NO_x	SO_2	CO	VOC	PM_{10}	NH_3
Turbines (2)	40.0	1.02	13.24	2.52	6.0	13.42
Cooling Towers (2)	---	---	---	---	0.06	---
Spray Dryer	---	---	---	---	0.05	---
Total	40.0	1.02	13.24	2.52	6.1	13.42

From SPPE (MID 2003a) Tables 8.1-20, 8.1B-3, and 8.1B-4 (Ammonia); Supplement A (MID 2003d) Table 8.1-20.

AIR QUALITY Table 16 summarizes the maximum (worst-case) estimated daily levels of the different criteria pollutants from the turbine and cooling tower. To assess worst-case daily emissions, the following assumptions were made:

Maximum Daily Emissions:

For NO_x:

- Each turbine operates in startup mode for 3 hours (three separate startups).
- Each turbine operates at full load for 21 hours.
- For CO, VOC, SO_2, PM_{10} and NH_3:
- Each turbine operates at full load for 24 hours.
- Cooling towers and spray dryer operate at maximum output for 24 hours.

Air Quality Table 16
MEGS Worst-Case Daily Emissions

	Maximum Daily, lb/day					
	NO_x	SO_2	CO	VOC	PM_{10}	NH_3
Turbines (2)	310.2	24.3	317.7	60.6	144.0	322.1
Cooling Towers (2)	---	---	---	---	1.2	---
Spray Dryer	---	---	---	---	1.2	---
Total	310.2	24.3	317.7	60.6	146.4	322.1

From SPPE (MID 2003a) Tables 8.1-20, 8.1B-3, and 8.1B-4 (Ammonia); Supplement A (MID 2003d) Table 8.1-20.

AIR QUALITY Table 17 summarizes the annual estimated levels of the different criteria pollutants from the turbine and cooling tower. To assess the annual emissions, the following assumptions were made:

Annual Emissions:

For NO_x:

- Each turbine operates in startup or shutdown mode for 365 hours per year.
- Each turbine operates at full load for 8,212.5 hours per year.
- Each turbine is shutdown for 182.5 hours per year.

For CO, VOC, SO_2 and PM_{10} and NH_3:

- Each turbine operates at full load for 8,760 hours per year.
- Cooling towers and spray dryer operate at maximum output for 8,760 hours per year.

Air Quality Table 17
MEGS Annual Emissions

	Maximum Annual, tons/year					
	NO_x	SO_2	CO	VOC	PM_{10}	NH_3
Turbines (2)	44.5	4.38	57.97	11.07	26.28	58.8
Cooling Tower (2)	---	---	---	---	0.22	---
Spray Dryer	---	---	---	---	0.22	---
Total	44.5	4.38	57.97	11.07	26.73	58.8

From SPPE (MID 2003a) Tables 8.1-20, 8.1B-3, and 8.1B-4 (Ammonia); Data Response 12 (MID 2003b) Tables 8.1B-8R, 8.1-31R and 8.1-32R; and Supplement A (MID 2003d) Tables 8.1-20, 8.1B-3, 8.1B-11.

Criteria Pollutants Generated From Initial Commissioning

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

Commissioning activities for the MEGS CTGs are expected to last approximately 96 hours per turbine. The range of commissioning tests for each CTG at MEGS includes the following: 1) full speed no load tests; 2) minimum (20 percent) load tests, no SCR or oxidation catalyst; 3) additional full speed no load tests (if necessary); and 4) multiple load tests, full SCR and oxidation catalyst. The Applicant has estimated the initial commissioning emissions in **AIR QUALITY Table 18**.

AIR QUALITY Table 18
Turbine Commissioning Emissions

Commissioning Activities	Operation Duration [a]	Fuel Use [b]	NO_x	CO	VOC	PM_{10}	SO_x
(per CTG)	(Hours)	(MMBtu/h, HHV)	Hourly Emissions, lb/hr				
Full Speed, No Load Test	4	100	36.24	39.72	3.75	3.00	0.1
20% Load Test, no SCR or oxidation catalyst	20	100	15.22	22.51	2.00	3.00	0.1
Full Speed, No Load Test (if necessary)	24	100	36.24	22.51	2.00	3.00	0.1
Multiple Load Test, full SCR and oxidation catalyst	48	500	29.45	6.62	1.25	3.00	0.5
Total, lbs (2 CTGs)	192	---	5,465	2,934	326	576	58

From SPPE (MID 2003a) Appendix 8.1B, Table 8.1B-6.

As shown in this schedule, initial tests would be performed prior to the installation of the SCR system and oxidation catalyst. Under this scenario, NO_x and CO emissions would be high because the emissions control systems would not be functioning.

IMPACTS

Following is the Environmental Checklist that identifies potential impacts in this issue area. Below the checklist is a discussion of each impact, and an explanation of the impact conclusion.

ENVIRONMENTAL CHECKLIST	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
AIR QUALITY – Would the project:				
a. Conflict with or obstruct implementation of the applicable air quality plan?				
Ozone Plan	N/A	N/A	N/A	N/A
PM_{10} Plan		X		
b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?		X		
c. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?		X		
d. Expose sensitive receptors to substantial pollutant concentrations?		X		
e. Create objectionable odors affecting a substantial number of people?			X	

Significance Criteria

Staff has used two main significance criteria in evaluating this project. First, all project emissions of nonattainment criteria pollutants and their precursors (NOx, VOC, PM_{10} and SO_2) are considered to be significant and need to be mitigated to the extent feasible. 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 to the extent feasible. For construction emissions, the mitigation that is considered is limited to controlling both construction equipment tailpipe emissions and fugitive dust emissions the maximum feasible extent. For operating emissions, the mitigation includes both feasible emission controls and the use of emissions offsets for all nonattainment criteria pollutants and their precursors.

A. Conflict with Air Quality Plan: Less Than Significant Impact

The proposed project is located in San Joaquin County, and is under the jurisdiction of the San Joaquin Valley Air Pollution Control District (District). The San Joaquin Valley Air Basin (SJVAB) is designated as non-attainment for both federal and state ozone and PM_{10} standards. Ozone is classified by federal and state standards as severe non-attainment. PM_{10} is designated as serious non-attainment and non-attainment by the federal and state governments, respectively. All other criteria pollutants are considered to be in attainment

by the state, and unclassified/attainment by federal standards due to lack of sufficient monitoring data. The District also has a maintenance plan for carbon monoxide; however, the project site is not located in any of the urban areas that are part of that maintenance plan.

The SJVAPCD is the lead agency for attaining timely compliance with federal standards within the San Joaquin County portion of the San Joaquin Valley Air Basin. 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 (TPAs), the development of transportation control measures (TCMs). The California Air Resources Board (CARB) is responsible for submitting the SIP to USEPA.

Ozone

Currently, the SJVAPCD does not have a federally approved SIP to attain federal ozone standards. The District did adopt an amended 2002 and 2005 Rate of Progress Plan on December 31, 2002. While there is no approved plan for the project to conflict or comply with, the project will be required to comply with all applicable District rules and regulations. The SJVAPCD rules and regulations specify the emissions control and offset requirements for new sources such as the MID Electric Generating Station. MEGS will use Best Available Control Technology (BACT) to control the project's emissions. In addition, the operational emissions of NO_x and VOC are proposed by the applicant to be fully mitigated by the use of emissions offset credits (ERCs) obtained by the applicant.

PM_{10}

The District prepared a Proposed 2003 PM_{10} Plan on May 12, 2003, which provides for attainment of the PM_{10} standards by 2010 (SJVAPCD 2003). This plan has not yet been approved by USEPA, but for the purposes of this assessment this plan is being considered as the applicable plan. Measures outlined in the Proposed 2003 PM_{10} Plan to reduce emissions during construction include amendments to Regulation VIII that would be implemented by September 2004 (SJVAPCD 2003). No other specific measures contained in the plan would appear applicable to the project construction emission sources considering that the construction, per the proposed schedule, would be completed between the fourth quarter of 2003 and the third quarter of 2004. The applicant would be expected to comply with any applicable revisions to the Regulation VIII rules that would be implemented prior to the end of the project construction. Therefore, the MEGS project would not conflict or obstruct the implementation of the Proposed 2003 PM_{10} Plan.

Additionally, the MEGS project will use Best Available Control Technology to control the project's emissions; and the operational emissions of NO_x, VOC, and PM_{10} are proposed by the applicant to be fully mitigated by the ERCs obtained by the applicant. Therefore, the operation of the MEGS will not conflict or obstruct the implementation of the Proposed 2003 PM_{10} Plan.

B. Violate Air Quality Standard or Contribute to Violation: Less Than Significant With Mitigation Incorporated

For this project, the impacts from construction emissions and operating emissions were quantified using air dispersion models, and the results of the modeling analysis were compared to ambient air quality standards.

Modeling Approach

The applicant performed an air dispersion modeling analysis to evaluate the project's potential impacts on the existing ambient air pollutant levels, both during construction and operation. An air dispersion modeling analysis usually starts with a conservative screening level analysis. Screening models use conservative assumptions, such as for the meteorological conditions, which may or may not actually occur in the area. The impacts calculated by screening models, therefore, can be double or more than the actual or expected impacts. If the screening level impacts are significant, refined modeling analysis is performed. A major difference in the refined modeling is that hour-by-hour meteorological data collected in the vicinity of the project site is used.

The applicant used the USEPA's Industrial Source Complex (ISC), Short-Term Model (ISCST3, Version 02035), to estimate the impacts of the project's NO_X, PM_{10}, CO and SO_X emissions resulting from project construction and operation. The ISC model is a steady-state Gaussian plume model, appropriate for regulatory use, used to assess pollution concentrations from a wide variety of emission sources.

The applicant used the SCREEN3 model to determine worst-case 1-hour NO_2, CO and SO_2 impacts under fumigation conditions. The SCREEN3 model is a steady-state Gaussian plume model, appropriate for the screening level modeling of single point sources to assess worst-case impacts.

For 1-hour average NO_x modeling (construction), the applicant provided a refined modeling analysis using the ozone limiting method (OLM) model (ISC3_OLM, Version 96113). This method calculates the maximum NO to NO_2 conversion using ozone concentration files to determine maximum 1-hour NO_2 concentrations with a default assumption that 10 percent of the tailpipe NO_x is NO_2 and that there is a 100 percent conversion of NO to NO_2 through a chemical reaction with the ground level ozone. This method is somewhat conservative in that it does not consider mixing or ozone consumption limitations in determining maximum NO_2 concentrations. This modeling method is accepted by the USEPA and CARB for 1-hour NO_2 modeling.

A description of the applicant's modeling analyses is provided in Section 8.1.5.1.2 of the SPPE (MID 2003a, pages 8.1-29 to 36), in the Appendices (MID 2003a, Appendix 8.1DB - Modeling Analysis), and in the revised construction modeling analysis (MID 2000f). The applicant utilized hourly meteorological data collected at the Modesto Airport, for the year 1999, as recommended by SJVAPCD (MID 2003a, page 8.1-31).

Construction Impacts

The following section discusses the project's short-term direct construction ambient air quality impacts, as estimated by the applicant.

Applicant Construction Impact Analysis

The applicant recalculated and remodeled the emissions of the MEGS onsite construction activities based on questions and comments from staff (MID 2003f). This analysis replaces the analysis provided in the AFC and the modeling was completed using the ISCST3 (Version 02035) model. The windblown dust emissions were modeled as single area sources that covered the total area of the construction site. The exhaust and fugitive dust emissions were modeled as a single volume, using two separate methods to determine the width of the volume source. The first used the width of the project site for the width calculation and the second used the width of the project site area containing the two gas turbines for the width calculation. The final volume source dimensions were calculated using the USEPA method for determining single volume source size for representing roadway emissions (USEPA 1995). To determine the construction impacts on short-term ambient standards (i.e. 1-hour through 24 hours), the worst-case daily onsite construction emission levels shown in **AIR QUALITY Table 10** were used. For pollutants with annual average ambient standards, the annual onsite emissions levels shown in **AIR QUALITY Table 11** were used. The annual emissions for construction activities are based on a 10-month period, 4 weeks per month, 5 days per week, which results in 200 days of construction (MID 2003b, Data Response 3). Modeling assumed that construction activities would occur 9 hrs/day (from 7 a.m. to 4 p.m.), and windblown dust would occur 24 hrs/day (MID 2003b, Data Response 7). The overall construction area, including the construction parking and laydown areas was calculated to be approximately 12.9 acres (52,458 m^2) based on a review of site maps (MID 2003b, Data Response 7). **AIR QUALITY Table 19** provides the results of this modeling analysis, and the values for the more conservative smaller volume source modeling approach are shown in the table.

AIR QUALITY Table 19
MEGS Ambient Air Quality Impact
Applicant Construction ISC Modeling Results

Pollutant	Averaging Period	Project Impact ($\sigma g/m^3$)	Background ($\sigma g/m^3$) [b]	Total Impact ($\sigma g/m^3$)	Limiting Standard ($\sigma g/m^3$)	Type of Standard	Percent of Standard
NO_2 [a]	1-Hour	251	164	415	470	CAAQS	88
	Annual	20.4	35.7	56.1	100	NAAQS	56
PM_{10}	24-Hour	79.7	**158**	**237.7**	50	CAAQS	**475**
	Annual	6.8	**31**	**37.8**	20	CAAQS	**189**
CO	1-Hour	997	9,154	10,151	23,000	CAAQS	44
	8-Hour	288	6,866	7,154	10,000	CAAQS	72
SO_2	1-Hour	1.5	47.2	48.7	655	CAAQS	7
	3-Hour	0.80	39.3	41.1	1,300	NAAQS	3
	24-Hour	0.20	23.6	23.8	105	CAAQS	23
	Annual	0.03	5.2	5.2	80	NAAQS	7

From MID 2003f and Construction Impact Modeling File RIP99A13.OUT, and MID 2003g and Construction Impact Modeling File RIP99C13.OUT.
Note(s):
a. 1-hour NO_x value was modeled using OLM_ISC. The annual value is multiplied by the Annual NO_x Ratio Method (ARM) EPA default value of 0.75.
b. Background values have been adjusted per staff recommended background concentrations shown in AIR QUALITY Table 9.

As can be seen from the modeling results provided in **AIR QUALITY Table 19**, the construction 24-hour and annual arithmetic PM_{10} impacts exceeds the ambient air quality standards and are therefore significant. The applicant's results show that only about 14 percent (11.13 $\sigma g/m^3$ out of 79.73 $\sigma g/m^3$) of the maximum modeled 24-hour PM_{10} concentrations from construction activities are due to exhaust from construction equipment rather than to fugitive dust from construction activities. On an annual average basis, the exhaust contribution is about 20 percent of the maximum annual PM_{10} impact.

The potential ambient air quality impacts associated with the construction of the natural gas pipeline, water pipelines and the subtransmission line interconnect are expected to be minimal since construction would occur for a short duration and require minimal equipment as the interconnections for each are a maximum of one-quarter mile. Therefore, these activities were not included in the applicant's construction impact modeling analysis.

Construction Mitigation

As described in the applicable LORS section, District Regulation VIII (i.e. Series 8000) rules limit fugitive dust during the construction phase of a project. However, compliance with Regulation VIII is not sufficient to ensure that near field construction impacts will be less than significant. Compliance with these regulations are substantially tied to a visual dust emissions (VDE) limit of 20 percent opacity (i.e., Rules 8021, 8031, 8051, 8061 for unpaved roads, 8071, and 8081). Additionally, there are exemptions to the Regulation VIII rules that would likely apply to the MEGS construction that would nullify compliance with some or all of the mitigation requirements listed in these rules. Additionally, staff does not interpret a visual dust emissions threshold of 20 percent as sufficient to mitigate near-field PM_{10} impacts. Therefore, staff will recommend that construction emission impacts be mitigated to the greatest feasible extent.

Applicant's Proposed Mitigation

In the SPPE (MID 2003a, Appendix 8.1F, Section 8.1F.3) the applicant proposes to implement the following measures to reduce emissions during construction activities. The applicant's PM_{10} emissions estimates in **AIR QUALITY Tables 10** to **12** and construction modeling results in **AIR QUALITY Table 19** assume the use of these emission control measures.

To control exhaust emissions from heavy diesel construction equipment:

- Limit engine idling time and shutdown equipment when not in use (a specific time limit was not provided).
- Perform regular preventative maintenance to reduce engine problems.
- Use CARB ultra-low sulfur content diesel fuel for all heavy construction equipment (MID 2003b, Data Response 6).
- Use low-emitting diesel engines meeting EPA emission standards for construction equipment, if available.

To control fugitive dust emissions:

- Use water application or chemical dust suppressant on unpaved travel surfaces and unpaved parking areas.
- Use vacuum sweeping and/or water flushing on paved travel surfaces and parking areas.
- Require all trucks hauling loose material to cover the contents or maintain a minimum of two feet of freeboard.
- Limit traffic speed on unpaved roads to 25 miles-per-hour (mph).
- Install sandbags or other erosion control measures to prevent silt runoff.
- Re-plant vegetation in disturbed areas as soon as possible.
- Use gravel pads and wheel washers or wash truck tires leaving the construction site as needed.
- Use windbreaks and/or water or chemical dust suppressant to control wind erosion from disturbed areas.

Adequacy of Proposed Mitigation

The applicant's proposed mitigation was included in the modeling analysis as summarized in **AIR QUALITY Tables 19**. The applicant's revised PM_{10} emission estimate assumes a very aggressive control efficiency factor for fugitive dust control (90^{+}%). However, even with this control efficiency factor included, the modeling analysis shows that the applicant's mitigated construction PM_{10} impacts are predicted to be potentially significant. Additionally, without ongoing compliance monitoring, the control efficiency used by the applicant in their emission estimates is highly questionable. Therefore, the applicant's proposed mitigation is not considered adequate.

The maximum 24-hour PM_{10} impacts occur to the southeast and northwest of the proposed project site and are highest at the fence line and decrease rapidly with distance from the proposed project site (MID 2003a, Appendix 8.1F, Section 8.1F.5.2). The directions of maximum impact correspond to the prevalent annual wind direction (to the southeast) and the prevalent winter wind direction (to the northwest). The 24-hour PM_{10} construction impact concentrations at the fence line are approximately 80 $\sigma g/m^3$, and the concentrations found at the maximum exposed residence and several other residences to the northwest of the project site are over 20 $\sigma g/m^3$. Staff would consider these receptor impacts, which are greater than 40% of the CAAQS in an area that regularly exceeds the CAAQS, to be a potentially significant impact that requires all feasible mitigation.

Staff is proposing additional construction mitigation measures to mitigate the potentially significant construction PM_{10} impacts.

Staff Proposed Mitigation

Staff is recommending construction PM_{10} emission mitigation measures that include some of the mitigation measures proposed by the applicant and several additional

construction PM_{10} emission mitigation measures and compliance assurance measures specified in Conditions of Exemption **AQ-C1** through **AQ-C5**.

Staff recommends **AQ-C1** to require the applicant to have an on-site construction mitigation manager, who will 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 Exemption **AQ-C2**.

Staff recommends fugitive dust and diesel engine mitigation measures be provided in Condition of Exemption **AQ-C3**. **AQ-C3** includes revisions to, or additions to, the construction emission mitigation measures proposed by the applicant; including the following:

- use of gravel in high traffic areas and the construction laydown area;
- covering and treatment of soil stockpiles;
- use of paved access aprons;
- limit traffic speed to 10 mph;
- suspension of all earth moving activities under windy (i.e. sustained winds >25 mph) conditions;
- restrict idle time, to the extent practical, to no more than 10 minutes;
- use of diesel engines that meet EPA Tier I EPA certified standards, or better, for off-road equipment; and
- use of catalyzed particulate filters (soot filters) on diesel engines, greater than 50 hp, that do not have Tier 1 standards (50 to 175 hp) and that do not meet Tier II particulate standards.

Staff recommends Conditions of Exemption **AQ-C4** to limit visible emissions from construction activities at the construction sites, and limit the project related construction visible emissions from occurring within 100 feet of occupied structures.

Staff recommends Condition of Exemption **AQ-C5** to limit the applicant to a 12-hour-day work schedule during the high emission site preparation activities. The applicant used a work schedule of 9 hours per day to develop their impact assessment (MID 2003g). A significant increase to this schedule, under most cases, could significantly increase the quantity of daily emissions of dust and significantly increase the local impacts. For example, a 20-hour work day would more than double the emissions and the 79.7 $\mu g/m^3$ maximum fence line impact shown in **Air Quality Table 19** and more than double the over 20 $\mu g/m^3$ maximum impact modeled at the maximum exposed residences northwest of the project site. Currently, there are no other restrictions, such as local noise ordinances, that would effectively limit the project's daily construction schedule. In consideration of the fugitive dust and construction equipment mitigation recommended in Condition of Exemption **AQ-C3**, and in order to allow some construction flexibility, staff has recommended in **AQ-C5** to limit the high fugitive dust causing site preparation activities to a 12-hour per day schedule. This limitation is

necessary to mitigate the maximum 24-hour PM_{10} construction impact potential. However, under certain circumstances like after a heavy rain, the potential for fugitive dust emissions will be minimized. In order to provide some relief in the case of rain halting construction during the initial site preparation activities, recommended Condition of Exemption **AQ-C5** gives the CPM the discretion to grant excursions beyond the 12-hour work schedule if site conditions are such that the requested schedule excursion will not cause significant construction dust impacts.

Staff believes that the construction air quality impacts will be less than significant with the implementation of the mitigation and compliance assurance measures contained in the recommended Conditions of Exemption.

Operation Impacts

The following section discusses the project's direct ambient air quality impacts, as estimated by the applicant. The applicant performed direct impact modeling analyses, including operations, fumigation, startup, and commissioning impact modeling. When the District issues its Authority to Construct, the MEGS permit emission levels must be no greater than the emissions presented in this analysis in order for the impact assessment presented herein to remain valid.

Direct Impacts

Applicant Operations Modeling Impact Analysis

A screening modeling analysis was performed to determine the inputs to the refined modeling analysis. The ISCST3 model (Version 02035) was used for the screening modeling analysis, using one year of meteorological data (1999) from the Modesto Airport. The operating conditions examined in the screening analysis represent maximum and minimum turbine loads at maximum, average, and minimum ambient operating temperatures. A total of sixteen (16) cases were analyzed in the screening modeling analysis (MID 2003a, Table 8.1D-2).

- ∉ Case 1) Hot Base - 102°F ambient temperature, 100 percent load, with chiller and dilution air
- ∉ Case 2) Hot Base - 102°F, 100 percent load, with chiller, without dilution air
- ∉ Case 3) Hot Base - 102°F ambient temperature, 100 percent load, without chiller, with dilution air
- ∉ Case 4) Hot Base - 102°F ambient temperature, 100 percent load, without chiller and dilution air
- ∉ Case 5) Hot Low - 102°F ambient temperature, 20 percent load, with chiller, without dilution air
- ∉ Case 6) Hot Low - 102°F ambient temperature, 20 percent load, without chiller, with dilution air
- ∉ Case 7) Hot Low - 102°F ambient temperature, 20 percent load, without chiller and dilution air
- ∉ Case 8) Avg Base - 67°F, 100 percent load, with chiller and dilution air

- Case 9) Avg Base - 67°F, 100 percent load, with chiller, without dilution air
- Case 10) Avg Base - 67°F ambient temperature, 100 percent load, without chiller, with dilution air
- Case 11) Avg Base - 67°F ambient temperature, 100 percent load, without chiller and dilution air
- Case 12) Avg Low - 67°F, 20 percent load, with chiller, without dilution air
- Case 13) Avg Low - 67°F, 20 percent load, without chiller and dilution air
- Case 14) Cold Base - 15°F, 100 percent load, with heater and dilution air
- Case 15) Cold Base - 15°F, 100 percent load, with heater, without dilution air
- Case 16) Cold Low - 15°F, 20 percent load, with heater, without dilution air

Results of the screening level analysis showed that Case 4 had the highest annual NO_2 and 24-hour / annual SO_2 impacts, and impacts for all other pollutants and averaging periods were the highest under Case 12.

A refined modeling analysis was performed to identify the worst-case ground-level impacts from operational emissions of the proposed project based on the results of the screening analysis. The ISCST3 model (Version 02035) was used for the refined modeling analysis with one year of meteorological data (1999) from the Modesto Airport. One-hour NO_2 impacts were modeled using ISC3_OLM model (Version 96113). For this refined modeling analysis, the applicant conducted a Good Engineering Practice (GEP) stack height analysis using the Building Profile Input Program (BPIP) Version 98086, and downwash effects were modeled for the facility using the ISCST3 model.

The applicant's predicted maximum concentrations of the non-reactive pollutants from the turbines, cooling towers, and spray dryer are summarized in **AIR QUALITY Table 20.**

Air Quality Table 20
MEGS Ambient Air Quality Impact
Applicant Operational Impact ISC Modeling Results

Pollutant	Averaging Period	Project Impact ($\sigma g/m^3$)	Background ($\sigma g/m^3$) [b]	Total Impact ($\sigma g/m^3$)	Limiting Standard ($\sigma g/m^3$)	Type of Standard	Percent of Standard
NO_2	1-Hour	1.73	164	165.7	470	CAAQS	35
	Annual	0.02 [a]	35.7	35.7	100	NAAQS	36
PM_{10}	24-Hour	0.52	**158**	**158.5**	50	CAAQS	**317**
	Annual	0.13	**31**	**31.1**	20	CAAQS	**156**
$PM_{2.5}$	24-Hour	0.52	**95**	**95.5**	65	NAAQS	**147**
	Annual	0.13	**18.7**	**18.8**	12	CAAQS	**157**
CO [d]	1-Hour	2.53	9,154	9,157	23,000	CAAQS	40
	8-Hour	0.42	6,866	6,866	10,000	CAAQS	69
SO_2 [e]	1-Hour	0.19	47.2	47.4	655	CAAQS	7
	3-Hour	0.06	39.3	39.4	1,300	NAAQS	3
	24-Hour	0.01	23.6	23.6	105	CAAQS	22
	Annual	0.003	5.2	5.2	80	NAAQS	7

From SPPE (MID 2003a) Table 8.1-26; Project Impact Modeling File RIP99_07.OUT; Supplement A (MID 2003d) Table 8.1-26.
Note(s):
a. Modeled annual NO_x corrected to NO_2 using ARM default value of 0.75.
b. Background values have been adjusted per staff recommended background concentrations shown in AIR QUALITY Table 9.

The applicant's modeling results indicate that the project's operational impacts would not create violations of NO_2, SO_2 or CO standards, but could further exacerbate violations of the PM_{10} standards. In light of the existing PM_{10} non-attainment status for the project site area, staff considers the project's PM_{10} and criteria pollutant PM_{10} precursor emissions to be significant and therefore the project emissions must be mitigated. The attainment status for the $PM_{2.5}$ NAAQS and CAAQS have not yet been determined, therefore, any violations or contributions to violations of those standards cannot be assessed at this time. $PM_{2.5}$ emissions are a subset of PM_{10} emissions, so staff has identified the use of appropriate PM_{10} emissions controls and emissions mitigation as an appropriate strategy to mitigate the project's operating $PM_{2.5}$ emissions.

Applicant Fumigation Modeling Impact Analysis

There is the potential that higher short-term concentrations may occur during fumigation conditions. During the early morning hours before sunrise, the air is usually very stable. During such stable meteorological conditions, emissions from elevated stacks rise through this stable layer and are dispersed. When the sun first rises, 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 will also be vertically mixed, bringing some of those emissions down to the ground level. Later in the day, as the sun continues to heat the ground, this vertical mixing layer becomes higher and higher, and the emissions plume becomes better dispersed. The early morning pollution event, called fumigation, usually lasts approximately 30 to 90 minutes.

Fumigation conditions are generally only compared to 1-hour standards. The applicant analyzed the air quality impacts under fumigation conditions from the project turbines

using the SCREEN3 model. The results of the analysis, as shown in **AIR QUALITY Table 21**, indicate that the fumigation impacts would not exceed applicable 1-hour AAQS.

Air Quality Table 21
Maximum MEGS Fumigation Impacts, (µg/m^3)

Pollutant	Averaging Period	Project Impact (σg/m^3)	Background (σg/m^3) [a]	Total Impact (σg/m^3)	Limiting Standard (σg/m^3)	Type of Standard	Percent of Standard
NO_2	1-Hour	1.95	164	166.0	470	CAAQS	35
CO	1-Hour	2.85	9,154	9,157	23,000	CAAQS	40
	8-Hour	1.01	6,866	6,867	10,000	CAAQS	69
SO_2	1-Hour	0.22	47.2	47.4	655	CAAQS	7
	3-Hour	0.11	39.3	39.4	1,300	NAAQS	3

From SPPE (MID 2003a) Table 8.1-24, Table 8.1D-7, and Fumigation Modeling Files RIP01.OUT through RIP16.OUT.
Note(s):
a. Background values have been adjusted per staff recommended background concentrations shown in AIR QUALITY Table 9.

Maximum fumigation impacts for the turbines were predicted to occur about 7.6 miles from the facility (MID 2003a, Table 8.1D-7). The impacts under fumigation conditions are expected to be higher than the maximum concentrations calculated by ISC under downwash conditions (MID 2003a, page 8.1-35).

Applicant Startup Modeling Impact Analysis

The applicant modeled facility impacts during the startup of both turbines to conservatively evaluate short-term impacts under startup conditions. Emissions rates for this scenario were based on an engineering analysis of available data provided by a similar facility (MID 2003a, page 8.1-35). Exhaust parameters for the minimum operating load point (Case 12 - 20% load, 67°F) were used to characterize turbine exhaust during startup, and a maximum1-hour NO_x emissions rate of 20 lb/hr was used. Startup impacts were evaluated for the 1-hour averaging period using ISCST3. The results of the startup emissions modeling analysis are shown in **AIR QUALITY Table 22.**

Air Quality Table 22
MEGS Ambient Air Quality Impact
Applicant Turbine Startup Worst-Case Short-Term Engine Impact ISC Modeling

Pollutant	Averaging Period	Project Impact (σg/m^3)	Background (σg/m^3) [a]	Total Impact (σg/m^3)	Limiting Standard (σg/m^3)	Type of Standard	Percent of Standard
NO_2	1-Hour	24.34	164	188	470	CAAQS	40

From SPPE (MID 2003a) Table 8.1-24, Table 8.1D-6, and Turbine Startup Modeling File RIP99-06.OUT.
Note(s):
a. Background values have been adjusted per staff recommended background concentrations shown in AIR QUALITY Table 9.

The modeling results indicate that the startup emissions do not have the potential to cause significant ambient air quality impacts.

Applicant Commissioning Modeling Impact Analysis

There are two high-emissions scenarios possible during commissioning. The first would be when the combustor is being tuned prior to the installation of the SCR system and oxidation catalyst. NO_x and CO emissions would be high because the emissions control systems would not be functioning and because the combustor would not be tuned for optimum performance. The second high-emissions scenario for CO and NO_x would occur after the combustor had been tuned, but before completing the installation of the SCR system, when other parts of the turbine operating system are being checked out. This is likely to occur under transient conditions, characterized by minimum load operation (MID 2003a, page 8.1-36).

The exhaust parameters for the minimum operating load point (Case 12 - 20% load, 67°F) were used to characterize turbine exhaust during commissioning. The applicant modeled the commissioning impacts using ISCST3 assuming both turbines would be operating under high-emissions commissioning scenarios at the same time. The results of the commissioning emissions modeling analysis are shown in **AIR QUALITY Table 23.**

Air Quality Table 23
MEGS Ambient Air Quality Impact
Applicant Commissioning Worst-Case Short-Term Engine Impact ISC Modeling

Pollutant	Averaging Period	Project Impact (σg/m^3)	Background (σg/m^3) [a]	Total Impact (σg/m^3)	Limiting Standard (σg/m^3)	Type of Standard	Percent of Standard
NO_2	1-Hour	44.11	164	208	470	CAAQS	44
CO	1-Hour	48.35	9,154	9,202	23,000	CAAQS	40
	8-Hour	8.11	6,866	6,874	10,000	CAAQS	69

From SPPE (MID 2003a) Table 8.1-24, Table 8.1D-5, and Turbine Commissioning Modeling File RIP99-06.OUT.
Note(s):
a. Background values have been adjusted per staff recommended background concentrations shown in AIR QUALITY Table 9.

The modeling results indicate that the commissioning emissions do not have the potential to cause significant ambient air quality impacts. Additionally, these results are considered to be conservative, as the applicant has stated that no more than one turbine would be operated in an uncontrolled mode (commissioning or startup) at a time. The other turbine will either be shutdown or operating in a controlled mode up to full load (MID 2003b, Data Response 11).

Secondary Pollutant Impacts

The project's gaseous emissions of NO_x, SO_2, VOC and ammonia can contribute to the formation of the secondary pollutants, ozone and PM_{10}. 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. No regulatory agency models are approved for assessing single source ozone impacts. However, because of the known relationship of NO_x and VOC emissions to ozone formation, it can be said that the emissions of NO_x and VOC from the MEGS do have the potential (if left unmitigated) to contribute to higher ozone levels in the region.

Secondary PM_{10} formation is the process of conversion from gaseous reactants to particulate products. The process of gas-to-particulate conversion is complex and depends on many factors, including local humidity and the presence of other compounds. Currently, there are no agency (EPA or CARB) recommended models or procedures for estimating nitrate or sulfate formation. Nitrogen oxides first react to form nitric acid, which then reacts reversibly with ammonia to form ammonium nitrate. Sulfur oxides first react to form sulfuric acid, which then react irreversibly to form ammonium bisulfate and ammonium sulfate. Because of the known relationship of NO_x and SO_2 emissions to secondary PM_{10} formation, these emissions, if left unmitigated, will contribute to higher PM_{10} levels in the region.

The ammonia emissions from the project would come from the SCR system, which controls the NO_x emissions, as unreacted ammonia, or "ammonia slip," that remains in the exhaust after passing through the SCR catalyst system. While the ammonia emissions are recognized as a necessary by-product of the NO_x control system, staff still encourages the applicant to control their ammonia slip emissions to the lowest possible extent, while maintaining the guaranteed NO_x emission limit. CARB has indicated that districts should consider recommending an ammonia limit of 5 ppm for gas turbines (CARB 1999), and for large frame turbines with effective dry low-NOx combustors, staff agrees with the CARB recommendation. However, for the MEGS project, using aero derivative turbines running in simple cycle mode, staff considers a 10 ppm ammonia limit to be acceptable.

The applicant is proposing to mitigate the project's NO_x, VOC, and SO_2 emissions through the use of emission offsets. These offsets are currently proposed to be provided at minimum 1:1 offset ratio. Assuming that the proposed emission offsets are surrendered at a minimum 1:1 offset ratio, it is staff's determination that the project will 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 a water injection system, SCR with ammonia injection, oxidation catalyst, and operate exclusively on pipeline quality natural gas to limit emission levels from each turbine.

The SPPE application (MID 2003a, page 8.1-45, and Table 8.1-17) provides the following proposed BACT emission limits for each CTG:

- NO_x: Emissions - 2.5 ppmvd at 15 percent O_2 and 4.5 lb/hr (excluding startup/shutdown)
- CO: Emissions - 6.0 ppmvd at 15 percent O_2 and 6.6 lb/hr
- VOC: Emissions – 2.0 ppmvd at 15 percent O_2 and 1.26 lb/hr
- PM_{10}: Emissions – 3.00 lb/hr
- SO_2: Emissions – 0.20 ppmvd at 15 percent O_2 and 0.51 lb/hr with fuel sulfur content of 0.36 grains/100 scf
- NH_3: Emissions - 10 ppmvd at 15 percent O_2 and 6.71 lb/hr

Emissions from the cooling towers are exempt from permitting, but the cooling tower design is noted to have a controlled drift emission rate of 0.001% of the recirculating water flow (MID 2003a, Attachment 8.1B Table 8.1B-2).
The ZLD system spray dryer has a baghouse as part of its integral design for the collection of the separated solids.

Emission Offsets

District Rule 2201 requires that the applicant provide emission offsets, in the form of banked ERCs, for the project's emissions of NO_x, VOC and PM_{10}. For CEQA compliance, the CEC staff recommends that all non-attainment pollutants and their precursors be mitigated at a minimum 1:1 ratio (i.e. for MEGS such pollutants are NO_x, VOC, PM_{10}, and SO_2). Staff is not recommending any emission offsets for the projects CO emissions as they do not have the potential to cause any significant impacts. **AIR QUALITY Table 24** shows the applicant's estimate of the emission liabilities that need to be mitigated. Detailed annual emissions information is provided in **AIR QUALITY Table 17**.

AIR QUALITY Table 24
MEGS Annual Emission Liability and Applicant's CEQA Offset Proposal (lb/year)

	NO_x	VOC	PM_{10}	SO_2
MEGS Emissions	88,990	22,137	53,460	8,760
Applicants CEQA Offset Mitigation Proposal	103,801[a]	22,137	53,460[b]	8,760

From SPPE (MID 2003a) Appendix 8.1B, Table 8.1B-3, 8.1B-8, Table 8.1B-10 and Attachment 8.1B-1 (ERCs); Data Responses 12, 16, and 27 (MID 2003b) Tables AQ-16, AQ-27, 8.1B-8R, 8.1-10R, 8.1-31R and 8.1-32R; and Supplement A (MID 2003d) Table 8.1B-8, and staff's interpretation of the applicant's offset proposal.

Note(s):

a. The applicant's offset proposal for NOx includes the District's offset requirements, which for this pollutant provide an overall offset ratio of greater than 1:1

b. Offset proposal shown is based on an interpollutant offset trade of SO_2 for PM_{10} ERCs at a 1:1 ratio for all of the project's emissions, including the cooling tower and spray dryer PM_{10} emissions.

For this case the applicant is proposing SO_2 for PM_{10} interpollutant offsets, for both their NSR offset requirements under District regulations and for CEQA mitigation purposes. The applicant has provided an assessment that claims that a SO_2 for PM_{10} interpollutant offset ratio of 1:1 is technically justified. The District has not completed their review of the applicant's offset proposal and has not determined if they consider one lb of SO_2 to be sufficient to offset one lb of PM_{10} Staff has concerns with the interpollutant offset ratio justification provided by the applicant. Specifically, staff believes that the method used to justify the offset ratio should rely on several years' of ambient monitoring and emissions data from both Stanislaus and San Joaquin Counties, rather than a single

year of data from Stanislaus County; and that the calculation should use data from identical time periods, rather than mixing and matching annual average and worst-case 24-hour monitoring data. However, staff does not have access to all of the emissions and monitoring data needed to complete our own analysis of the interpollutant offset ratio, so we will be relying on the District's final determination for the appropriate SO_2 for PM_{10} interpollutant offset ratio. Additionally, the appropriate SO_2 for PM_{10} interpollutant offset ratio should be applied consistently for staff's CEQA analysis and the District's NSR permitting analysis. Therefore, staff has provided comments to the District regarding the applicant's interpollutant offset ratio justification calculations, so the District understands and can address our concerns in completing their determination of the appropriate interpollutant offset ratio. If the District determines that the appropriate SO2 for PM10 interpollutant offset ratio is greater than 1 to 1; then the applicant may need to obtain additional PM_{10} and/or SO_2 ERCs to fully mitigate the project.

As shown in **AIR QUALITY Table 25** through **AIR QUALITY Table 27**, the applicant has demonstrated, assuming that the District accepts their SO_2 for PM_{10} offset ratio proposal, that they own ERCs in quantities that are sufficient to offset the project's NO_x, PM_{10}, VOC, and SO_2 emissions per District and CEQA requirements.

NO_x Emission Offsets

AIR QUALITY Table 25 provides a summary of the total project NO_x emissions and identifies the project offset sources. ERC N-371-2 and N-372-2 were generated from boiler retrofitting, such as adding flue gas recirculation (FGR) and low NO_x burners. ERC C-538-2 was generated from the replacement of three existing 1,100 HP Superior IC engine generators with two 3.5 MW Centaur 40 gas turbine engine generators.

AIR QUALITY Table 25
NO_x Offsets Available for MEGS

Offset Source Location	Date of Reduction	Credit Number	Total Q1 (lb)	Total Q2 (lb)	Total Q3 (lb)	Total Q4 (lb)
757 E. 11th Street, Tracy	1992	N-371-2	3,971	10,226	0	17,390
2800 South California Street, Stockton	1992	N-372-2	0	9,439	51,165	922
1303 E. Herndon Ave, Fresno	2000	C-538-2	3,584	1,649	4,610	845
Total ERCs Provided	---	---	7,555	21,314	55,775	19,157
Distribute Q3 to Q1, Q2 and Q4	---	---	18,396	4,636	-29,825	6,793
Redistributed ERCs	---	---	25,951	25,950	25,950	25,950
Total NO_x Emissions	---	---	22,223	22,223	22,223	22,223
ERC Balance Remaining [a]	---	---	3,728	3,727	3,727	3,727

From SPPE (MID 2003a) Appendix 8.1B, Table 8.1B-8, Table 8.1B-10 and Attachment 8.1B-1 (ERCs); Data Responses 12-13 (MID 2003b) Tables 8.1B-8R, 8.1-10R, 8.1-31R, 8.1-32R, and Attachment AQ-14; and Supplement A (MID 2003d) Table 8.1B-10.
Note(s):
A zero balance means full mitigation, a negative balance indicates an offsets deficit, and a positive balance indicates offsets are available in excess of recommended CEQA offset levels.

The applicant's offset proposal will provide NO_x ERCs at a total offset ratio of greater than 1:1 (103,801 lbs of ERCs provided to mitigate emissions of 88,990 lbs). Therefore, staff determines that the applicant's NOx offset mitigation proposal satisfies CEQA mitigation requirements.

PM_{10} Emission Offsets

AIR QUALITY Table 26 provides a summary of the total project PM_{10} emissions and identifies the proposed SO_2 for PM_{10} project offset sources. Staff cannot at this time determine if the applicant's proposed SO_2 for PM_{10} interpollutant offset ratio is justified and therefore cannot determine if this offset proposal is adequate to satisfy CEQA mitigation requirements. ERC N-374-5 was generated from the shutdown of an entire stationary source. ERC C-531-5 was generated from the modification of a boiler. ERC S-1964-5 was generated from the retrofit of two boilers with flue gas recirculation (FGR) and low-NO_x burners (MID 2003c).

AIR QUALITY Table 26
SO_2 for PM_{10} Offsets Available for MEGS

Offset Source Location	Date of Reduction	Credit Number	Total Q1 (lb)	Total Q2 (lb)	Total Q3 (lb)	Total Q4 (lb)
4549 Ingram Creek Road, Westley (SO_x)	2000	N-374-5	3,000	0	3,000	4,000
10701 Idaho Avenue, Hanford (SO_x)	1992	C-531-5	26,440	17,209	0	8,032
400 South M Street, Tulare (SO_x)	1993	S-1964-5	500	500	500	500
Total ERCs Provided	---	---	29,940	17,709	3,500	12,532
Distribute Q1 to Q3 and Q4			-14,616	0	11,824	2,792
Redistributed ERCs			15,324	17,709	15,324	15,324
SO_2 for PM_{10} Interpollutant Offset Ratio			1.2:1a			
Total PM_{10} Offsets Provided @1.2:1			12,770	14,575.5	12,770	12,770
Total PM_{10} Emissions	---	---	13,365	13,365	13,365	13,365
ERC Balance Remaining [b]	---	---	-714	1,671	-714	-714

From SPPE (MID 2003a) Appendix 8.1B, Table 8.1B-8, Table 8.1B-10 and Attachment 8.1B-1 (ERCs); Data Response 18 (MID 2003b) Tables 8.1B-8R, 8.1-10R, 8.1-31R, 8.1-32R, and Attachment AQ-14; Data Response 27 (MID 2003c) Attachment AQ-27; Supplement A (MID 2003d) Table 8.1B-10; and Draft Initial Study Comments (MID 2003h).
Note(s):
a. The District has recently determined that the appropriate SO_2 to PM_{10} interpollutant offset ratio is 1.2:1.
b. A zero balance means full mitigation, a negative balance indicates an offsets deficit, and a positive balance indicates offsets are available in excess of required offset levels. Please note that the offset balance is not the same as the ERC balance.

Air Quality Table 26 shows that the applicant is short a total of 471 lbs of SO_2 ERCs to fully mitigate project's PM_{10} emissions using the District's approved interpollutant offset ratio of 1.2:1. Therefore, the applicant will need to obtain additional SO_2 or PM_{10} ERCs to fully mitigate the project's PM_{10} emissions. The total amount of ERCs that are recommended to mitigate the project's emissions are described further in the SO_2 Emissions Offset discussion.

VOC Emission Offsets

AIR QUALITY Table 27 provides a summary of the total project VOC emissions and identifies the project offset sources. ERC C-539-1 was generated from the replacement of three existing 1,100 HP Superior IC engine generators with two 3.5 MW Centaur 40 gas turbine engine generators. ERC C-552-1 was generated from the shutdown of emissions units. ERC C-554-1 and C-553-1 were generated from the replacement of agricultural pump engines with electric motors. ERC S-1963-1 was generated from the shutdown of an entire stationary source. ERC N-389-1 was generated from the retrofit of two boilers with low-NO_x burners and reducing the fuel oil usage of those boilers.

AIR QUALITY Table 27

VOC Offsets Available for MEGS

Offset Source Location	Date of Reduction	Credit Number	Total Q1 (lb)	Total Q2 (lb)	Total Q3 (lb)	Total Q4 (lb)
1303 E. Herndon Avenue, Fresno	2000	C-539-1	513	616	819	689
25184 Road 16, Chowchilla	2001	C-552-1	669	1,765	1,586	659
O'Neill Farming, Five Points	2001	C-554-1	216	684	1,077	949
O'Neill Farming, Five Points	2001	C-553-1	266	686	1,005	1,062
6941 W. Goshen, Visalia	2002	S-1963-1	1,661	1,640	1,406	1,058
800 W. Church Street, Stockton	1997	N-389-1	858	1,303	694	560
Total ERCs Provided	---	---	4,183	6,694	6,587	4,977
Distribute Q2 and Q3 to Q1 and Q4	---	---	1,427	-1,084	-976	633
Redistributed ERCs	---	---	5,610	5,610	5,611	5,610
Total Emissions	---	---	5,534	5,534	5,535	5,534
Balance Remaining [a]	---	---	76	76	76	76

From SPPE (MID 2003a) Appendix 8.1B, Table 8.1B-8, Table 8.1B-10 and Attachment 8.1B-1 (ERCs); Data Response 16 (MID 2003b) Tables AQ-16 and 8.1B-8R, and Attachment AQ-14; Data Response 27 (MID 2003c) Attachment AQ-27; Supplement A (MID 2003d) Table 8.1B-10; Draft Initial Study Comments (MID 2003h); and updated ERC information provided by the applicant (MID 2003i).

Note:

a. A zero balance means full mitigation, a negative balance indicates an offsets deficit, and a positive balance indicates offsets are available in excess of required offset levels. Please note that the offset balance is not the same as the ERC balance.

The applicant's offset proposal will provide VOC ERCs at a total offset ratio of 1:1 (22,137 lbs of ERCs provided to mitigate emissions of 22,137 lbs). Therefore, staff determines that the applicant's VOC offset mitigation proposal satisfies CEQA mitigation requirements.

SO_2 Emission Offsets

SO_2 emissions are a precursor to PM_{10}, which is a nonattainment pollutant at the project site area. As part of the CEQA evaluation, the CEC staff recommends that all non-attainment pollutants and their precursors be mitigated at a minimum 1:1 ratio. Currently, as noted above in the PM_{10} Emission Offsets discussion, the applicant does not have enough SO_2 emission reduction credits to fully offset the project's PM_{10} emissions using the District's approved 1.2:1 interpollutant offset ratio. Therefore, the applicant would need to obtain additional PM_{10} and/or SO_2 ERCs to cover both the remaining recommended PM_{10} offset need and the SO_2 offset need. The total amount of additional ERCs recommended by staff to fully offset the project are 9,231 lbs of SO_2 ERCs, or 7,693 lbs of PM_{10} ERCs, or a combination of SO_2 and PM_{10} ERCs that would equal 7,693 lbs of PM_{10} after applying the interpollutant offset ratio of 1.2:1 to the SO_2 ERCs.

Staff Proposed Mitigation

The District has determined that the appropriate SO_2 for PM_{10} interpollutant offset ratio is 1.2:1, higher than the applicant's proposed 1:1 ratio. Therefore, the applicant does not currently have sufficient ERCs to fully offset the project's PM_{10} and SO_2 emissions per staff's CEQA mitigation recommendation. Staff has included Condition of Exemption **AQ-C6** to ensure that the applicant complies with their minimum 1:1 offset ratio proposal for VOC, PM_{10} and SO_2; and **AQ-C6** includes a schedule requirement for

the applicant to acquire the additional ERCs that are recommended based on the District's SO_2 for PM_{10} interpollutant offset ratio determination.

C. Result in Considerable Increase in Criteria Pollutant in Non-Attainment Status: Less Than Significant With Mitigation Incorporated

The applicant performed a cumulative modeling analysis. This modeling analysis identifies whether the project, along with other identified air pollution sources known to be under development in the project area, would create a cumulative air quality impact.

Cumulative Impacts Modeling Analysis

To evaluate the cumulative emission impacts of the MID Electric Generating Station, District records were evaluated to determine other sources that may cumulatively impact the site area. The following criteria were used to identify other stationary emission sources located within six miles of the MEGS site that may contribute to cumulative impacts:

- Sources that have received an Authority to Construct (ATC) permit and operation began after 1999.
- Sources that have received an Authority to Construct (ATC) permit but are not yet operational; or
- Sources that have submitted complete ATC applications to the District.

To evaluate the cumulative emission impacts of the MID Electric Generating Station, District records were evaluated to determine other sources that may cumulatively impact the site area. The search criteria included new or modified emission sources located within 10 kilometers (6.2 miles) of the MEGS site that had a net emission increase of any size for NO_x, CO, SO_x, or PM_{10}, and all new sources that have received an Authority to Construct (ATC) issued after January 1, 2000 (MID 2003b, Attachment AQ-26). Emissions from existing projects operating prior to and during 1999 are reflected in the background ambient air quality data.

A review of District records identified a total of 13 emission sources that met the search criteria. However, nine (9) of these emission sources had either no emissions listed or were modifications that resulted in an emissions decrease. Thus, only the following four (4) new/modified emission units were identified to have the potential to contribute to cumulative impacts (MID 2003b, Attachment AQ-26, Exhibit 1):

- Nulaid Foods, Inc. - one (1) 7.86 MMBtu/hr natural gas fired Miura Model LX200SG boiler with a Miura low NO_x burner.
- Nulaid Foods, Inc. - one (1) 8.3 MMBtu/hr natural gas fired Miura Model LX200SG boiler with a Miura low NO_x burner.
- Verizon California - 380 BHP Cummins, Model M11-G2, diesel fired emergency standby IC Engine serving a 200 kW electrical generator.
- State of California, Department of Justice - 1180 HP Caterpillar, Model 3412, diesel fired emergency IC engine powering a 800 kW electric generator.

The applicant estimated the combined impacts of the MEGS project and the 4 new/modified sources using the ISCST3 Model (Version 3) with one year of meteorological data (1999) from the Modesto Airport. One-hour NO_2 impacts were modeled using ISC3_OLM model, which utilized concurrent ozone data from the Modesto 14th Street monitoring station (MID 2003b, pages AQ26-2 to AQ26-3). Turbine emissions sources associated with the MEGS project, as well as the 4-new/modified sources, were modeled as individual point sources. The maximum concentrations modeled for each pollutant and averaging period from these sources are shown in **AIR QUALITY Table 28**.

AIR QUALITY Table 28
Applicant Cumulative Impact ISC Modeling Results

Pollutant	Averaging Period	MEGS Project Impact (σg/m^3)	Impacts From Other Sources (σg/m^3)	Combined Maximum Impacts (σg/m^3)	Background (σg/m^3) [b]	Total Impact (σg/m^3)	Limiting Standard (σg/m^3)	Type of Standard
NO_2	1-Hour [a]	1.73	185.6	185.6	164	349.6	470	CAAQS
	Annual [b]	0.02	0.43	0.43	35.7	36.1	100	NAAQS
PM_{10}	24-Hour	0.45	0.32	0.45	**158**	**158.5**	50	CAAQS
	Annual [c]	0.10	0.09	0.11	**36**	**36.1**	20	CAAQS
CO	1-Hour	2.53	53.4	53.4	9,154	9,207	23,000	CAAQS
	8-Hour	0.42	18.1	18.1	6,866	6,884	10,000	CAAQS
SO_2	1-Hour	0.19	10.0	10.0	47.2	57.4	655	CAAQS
	24-Hour	0.01	0.28	0.28	23.6	23.9	105	CAAQS
	Annual	0.003	0.011	0.012	5.2	5.2	80	NAAQS

From Data Response 26 (MID 2003b) Attachment AQ-26, Tables 4 and 5.
Note(s):
a. OLM corrected using the ISC3_OLM model.
b. Modeled annual NO_x corrected to NO_2 using ARM default value of 0.75.
c. Annual arithmetic mean.

As shown in **AIR QUALITY Table 28**, the maximum combined impacts show very little overlap between the MEGS project and the 4 new/modified sources (identified as "Other Sources"). In fact, for many of the pollutants and averaging periods, the contribution of the MEGS project at the point of maximum combined impact is almost undetected by the ISCST3 model. Based on these results, the maximum combined impacts of the MEGS project and the four new/modified projects are not expected to cause any violations of the state or federal CO, SO_2, or NO_2 standards. Additionally, while the federal and state PM_{10} standards are already exceeded in the area, and any increase in ambient PM_{10} levels will contribute to an existing violation, the maximum cumulative impacts are almost identical to the MEGS project's impacts. Therefore, the cumulative impacts do not justify additional mitigation beyond that which is being recommended to mitigate the project impacts.

Applicant's Proposed Mitigation

See the mitigation description under impact issue "B" above.

Staff Proposed Mitigation

See the mitigation description under impact issue "B" above.

D. Expose Sensitive Receptors to Substantial Pollutant Concentrations: Less Than Significant With Mitigation Incorporated

Existing Residential and Sensitive Receptors

POWER PLANT SITE

The project is located in an industrial area in the City of Ripon, adjacent to the City's wastewater treatment plant. The nearest residences are located approximately 700 feet north of the project site, along Locust and Stockton Avenues between 5th Street and West 4th Street. Potentially sensitive receptors within the area are generally limited, and are located more than ½ mile from the project site (MID 2003a, page 8.6-3). In particular, Ripon Elementary School is located north of the project site, and Almost Home (Community Center) is located northwest of the project site (MID 2003a, Figure Appendix 8.6A – Sensitive Receptors). Thus, an exposure to substantial pollutant concentrations would not involve sensitive individuals at higher rates than the general population.

Also, as described in the Socioeconomics analysis, there are two census tracts within a 6-mile radius of the proposed MEGS site that contains a minority and low-income community that meets the environmental justice criteria. However, because the proposed project would comply with all regulatory requirements with regard to air quality and assuming that the applicant will comply with the Conditions of Exception listed below, no significant air quality impacts are anticipated. Therefore, the project will not have adverse impacts on this community, disproportionate or otherwise.

LINEAR FACILITIES

The linear facilities to be constructed as a result of this project are as follows:

- Approximately 0.25 miles of 69-kV subtransmission line and fiber optic cable.
- Approximately 0.25 miles of 8-inch diameter natural gas supply pipeline.
- Water pipelines of varying length, extending no more than 30 feet from the project site, for potable water supply, non-potable water supply, industrial wastewater discharge, sanitary sewer discharge, and firewater supply. These pipelines will interconnect to the respective utility service tap lines, currently being installed under South Stockton Avenue and Doak Boulevard.

There may be short-term adverse impacts at residences and sensitive receptor locations that are adjacent to these linear construction routes. However, the time frame for these construction impacts is very short at any one location and these impacts are not considered to be significant.

Temporary Construction Emissions

As described earlier under impact issue "B," the proposed project would generate temporary emissions from constructing the MEGS facility and the associated transmission lines, and natural gas and water pipelines. As a result, residential land uses may experience short-term adverse air quality impacts. However, through the implementation of the suggested mitigation measures and Conditions of Exemption

during construction, it is assumed that the project would not result in any significant air quality impacts.

Operation Emissions

As described earlier under impact issue "B," the proposed project would generate a substantial level of criteria pollutant emissions from operating the 95-megawatt (MW) natural gas-fired simple-cycle power plant. However, the emissions of NO_x, VOC, SO_2 and PM_{10} would be offset through the surrender of ERCs. In addition to these emissions being offset, the closest sensitive receptor is located over one-half mile from the proposed site. As a result, staff concludes that the criteria pollutant emissions generated from this project would not cause any significant air quality impacts to sensitive receptors.

In addition, because the proposed project would comply with all regulatory requirements with regard to air quality and no significant air quality impacts are anticipated, the project will not have disproportionate adverse impacts on the identified minority and low-income community.

Applicant's Proposed Mitigation

See the mitigation description under impact issue "B" above.

Staff Proposed Mitigation

See the mitigation description under impact issue "B" above.

E. Create Objectionable Odors: Less Than Significant Impact

Construction activities do not generally create strong or objectionable odors. There may be minor odors associated with the use or refueling of the diesel and gasoline powered equipment, or from painting or other surface treatments (i.e. roofing or roadway repaving). No significant impacts are expected from these temporary minor odor sources.

No odor impact is anticipated from the operation of the main power facilities, as no significant emissions of odorous compounds would result from the gas turbines, cooling towers, or ZLD system exhausts under normal operations. The odor threshold for ammonia is approximately 5 to 10 ppm, and the stack emissions of ammonia for the gas turbine exhaust are expected to be limited to 10 ppm on a 24-hour basis. There is the potential for somewhat higher short-term ammonia emission concentrations (i.e. concentration spikes), particularly during startup, shutdown or during load swings. However, after dispersion the maximum ammonia concentrations at ground level will be well below the odor threshold. Odors resulting from accidents could occur; please see the **HAZARDOUS MATERIAL MANAGEMENT** section for further discussion of the consequence analysis of ammonia storage and handling accidents.

Applicant's Proposed Mitigation

None.

Staff Proposed Mitigation

None.

RESPONSE TO PUBLIC AND AGENCY COMMENTS

WRITTEN COMMENTS – INTERVENOR, MR. ROBERT SARVEY

Mr. Sarvey's comments are provided in the Comments Index.

Sarvey Interpollutant Ratio Comment

Response: Staff has provided comments to the District regarding our concerns with the applicant's interpollutant offset ratio calculations. The District has verbally indicated that the SO_2 for PM_{10} interpollutant offset ratio will be 1.2:1 for this project. Staff has used that offset ratio in determining staff's recommended CEQA mitigation for the project and has incorporated it into the revised recommended Condition of Exemption AQ-C6.

Sarvey Ammonia Emissions Comment

Response: Staff agrees that ammonia is a $PM_{2.5}$ and PM_{10} precursor, staff also agrees that fine particulate has been shown to have specific health effects and that fine particulate impairs visibility. However, staff's approach to mitigating ammonia emission impacts from SCR control systems is to recommend the lowest reasonable ammonia slip limit. For this simple cycle project, that is expected to have a relatively high uncontrolled NO_x concentration (25 to 30 ppm), staff believes that the lowest reasonable ammonia slip limitation is 10 ppm. For larger combined cycle projects that have substantially lower uncontrolled NO_x concentrations (9 to 15 ppm guaranteed maximums) staff is now generally recommending an ammonia slip limit of 5 ppm.

The ammonia emissions for this project are the direct result of using a control technology to reduce NO_x emissions. The reduction of NO_x emissions due to the SCR system for both turbines could be as high or higher than 90 pounds per hour and 370 tons per year, while the maximum corresponding ammonia emissions from the ammonia slip would be limited to 13.4 pounds per hour and 58.8 tons per year.

Staff believes that actual worst-case ammonium sulfate/nitrate impact will be much lower than that implied using the reference Mr. Sarvey has copied from the Cosumnes Power Plant project FSA. A linear interpolation of the directly emitted $PM_{2.5}$ modeling results to identify potential secondary particulate impacts is an overly conservative comparison for the determination of worst-case impacts that could occur near the project site. Secondary particulate is more of regional issue than a near-field impact issue because secondary particulate takes time to form and there will not be enough time for any significant conversion to occur close to the site where the maximum turbine particulate impacts were found to occur. The modeling results show that the location of the maximum turbine 24-hour particulate impact of 0.20 ug/m^3 (please note that the maximum impact results shown in **Air Quality Table 20** include the cooling tower and spray dryer baghouse) occurs only 161 meters from the center of the two turbine stacks. Assuming a conservatively high secondary particulate conversion rate of 30 percent per

hour and an average wind speed of 5 meters per second this would mean the conversion of secondary particulate at the maximum exposed receptor would be only 0.27%. By the time any significant secondary particulate formation were to occur the plume would be far from the project site and would be dispersed to a small fraction of the maximum impact value found at 161 meters from the turbine stacks.

While staff understands Mr. Sarvey's concerns, staff will not be recommending additional mitigation for the project's ammonia emissions, which for most of the operational life of the project would be expected to be significantly less than the worst-case estimates of 10 ppm and 58.8 tons/year.

Sarvey Offsets for Secondary $PM_{2.5}$ Formation Comment

Response: Mr. Sarvey has provided a sentence from the Cosumnes FSA, but did not provide the complete statement. The complete statement notes that due to the uncertainty in the conversion rate of ammonia staff only recommended a reduction in the ammonia limit. Staff is not aware of any power plant project within the State of California for which ammonia emission offsets have been required, to address secondary particulate formation or any other reason. Further, even if ammonia offsets were determined to be necessary for CEQA impact mitigation, an appropriate ratio would be difficult to determine and likely could not be legally defended.

Staff cannot require the "good neighbor gestures" that Mr. Sarvey suggests for the project, as that would be beyond the CEQA mitigation determined to be necessary by staff. In the Tracy Power Plant case, which was cited as an example by Mr. Sarvey, the additional mitigation was a proposal worked out between that applicant and other interested parties including the City of Tracy. The framework of the additional community mitigation measure was included in the Conditions of Certification for the Tracy project with the applicant's acceptance, and was not a mitigation that was imposed on the applicant by staff. This project's applicant has not shown a similar willingness to agree to additional community mitigation, and staff cannot impose this additional mitigation if staff does not feel it is warranted. However, staff certainly would not object to any additional community mitigation agreed to by the applicant; and would encourage Mr. Sarvey, the City of Ripon, or any other interested parties to determine if a community mitigation program agreement can be reached with the applicant.

The District has found that SCR is BACT for this project. SCONOx has not been shown to be technically achievable for this type of turbine project. Staff has accepted the District's BACT finding for this project.

Sarvey Fumigation Impacts Comment

Response: Staff has included an assessment of fumigation impacts, and **AIR QUALITY Table 21** presents the fumigation modeling results. The fumigation modeling results indicate that fumigation is not a significant concern for this project. This project's simple cycle design is one reason that fumigation has not been shown to be a significant concern. The high temperature and velocity of the simple cycle turbine exhausts do not allow for a near field fumigation effect to occur. Typically, exhausts that have little or no vertical momentum and thermal buoyancy are those that can create high near-field fumigation impacts.

VERBAL COMMENTS – LOCAL RESIDENT, MS. PAM KAEFER

Ms. Kaefer attended the DIS Workshop and was concerned about construction dust and asked if watering would be required to reduce construction dust.

Response: Yes, watering of all disturbed areas will be required to reduce fugitive dust emissions during construction. Staff has carefully reviewed the potential for construction emission impacts and has recommended the construction mitigation and compliance assurance measures contained in Conditions of Exemption AQ-C1 through AQ-C5. If any construction dust problems occur during the construction the public can call the project's Compliance Project Manager (Ila Lewis 916-654-4678), or the SJVUAPCD (800-281-7003). Staff also would suggest that the public call Modesto Irrigation District so that they can directly address any local problems encountered during construction and operation of the project.

CONCLUSIONS

The final District approved SO_2 for PM_{10} offset ratio is 1.2:1, which is higher than the 1:1 ratio proposed by the applicant. Therefore, the applicant does not have enough SO_2 ERCs to fully offset the project's PM_{10} and SO_2 emissions at a minimum 1:1 ratio. The applicant needs to obtain additional PM_{10} and/or SO_2 ERCs, as included in Condition of Exemption AQ-C6, in order for staff to be able to recommend approval of this project.

Alternatively, staff would accept it if the applicant were to lower the worst-case hourly turbine PM_{10} emissions assumption from 3.0 lbs/hour.. A value as low as 2.0 lbs/hour is consistent with the PM_{10} emission level recently sought and approved for the Henrietta Peaker Project (CEC 2003). The source test data from the Henrietta turbines indicated that actual emission levels that were less than 1.0 lb/hour, giving a 100% safety margin when assuming a worst-case emission factor of 2.0 lbs/hour. Both CEC staff and the District have approved this lower emission limit for this similar, perhaps essentially identical, turbine configuration project. Therefore, staff would be amenable to lowering the PM_{10} emissions limit to as low as 2.0 lbs/hour per turbine. At a turbine PM_{10} emission limit of 2.56 lbs/hr per turbine the applicant would currently have sufficient ERCs to fully offset the project's PM_{10} and SO_2 emissions per staff's recommended CEQA requirements.

Staff recommends the following Conditions of Exemption to address the impacts associated with the construction and operation of the MEGS. However, the conditions presented below may be revised prior to the evidentiary hearing to address any comments received on this Final Initial Study.

CONDITIONS OF EXEMPTION

GENERAL CONDITIONS

AQ-G1. The project owner shall provide the CPM copies of all Authority-to-Construct (ATC) and Permit-to-Operate (PTO) air quality permits received from the District.

Verification: The project owner shall submit copies of the ATCs and PTOs to the CEC CPM upon receipt of those permits from the SJVAPCD.

STAFF CONSTRUCTION AND PRE-CONSTRUCTION CONDITIONS

AQ-C1. The project owner shall fund all expenses for an on-site air quality construction mitigation manager (AQCMM) who shall be responsible for maintaining compliance with conditions **AQ-C1** through **AQ-C5** for the entire project site and linear facility construction. The on-site AQCMM may delegate responsibilities identified in Conditions **AQ-C1** through **AQ-C5** to one or more air quality construction mitigation monitors. The on-site AQCMM shall have full access to areas of construction of the project site and linear facilities, and shall have the authority to appeal to the CPM to have the CPM stop any or all construction activities as warranted by applicable construction mitigation conditions. The on-site AQCMM, and any air quality construction mitigation monitors responsible for compliance with the requirements of **AQ-C4**, shall have a current certification by the California Air Resources Board for Visible Emission Evaluation prior to the commencement of ground disturbance. The AQCMM may have responsibilities in addition to those described in this condition. The on-site AQCMM shall not be terminated without written consent of the 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, current ARB Visible Emission Evaluation certificate, and contact information for the on-site AQCMM and air quality construction mitigation monitors.

AQ-C2. The project owner shall provide a construction mitigation plan (CMP), for approval, which shows the steps that will be taken, and reporting requirements, to ensure compliance with conditions **AQ-C3** through **AQ-C5**.

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

AQ-C3. The on-site AQCMM shall submit to the CPM, in a monthly report , a construction mitigation report that demonstrates compliance with the following mitigation measures:

a) All unpaved roads and disturbed areas in the project and linear construction sites shall be watered until sufficiently wet. The frequency of watering can be reduced or eliminated during periods of precipitation.

b) No vehicle shall exceed 15 miles per hour within the construction site.

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

d) All construction equipment vehicle tires shall be washed or cleaned free of dirt prior to entering paved roadways.

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

f) All entrances to the construction site shall be graveled or treated with water or dust soil stabilization compounds.

g) No construction vehicles can enter the construction site unless through the treated entrance roadways.

h) Construction areas adjacent to any paved roadway shall be provided with sandbags to prevent run-off to the roadway.

i) All paved roads within the construction site shall be swept twice daily when construction activity occurs.

j) At least the first 500 feet of any public roadway exiting from the construction site shall be swept twice daily on days when construction activity occurs, and twice daily on any other day when dirt or runoff from the construction site is visible on the public roadways.

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

l) All vehicles that are used to transport solid bulk material on public roadways and that have 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 one foot of freeboard.

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

n) Any construction activities that may cause fugitive dust in excess of the visible emission limits specified in Condition **AQ-C4** shall cease when the wind exceeds 25 miles per hour unless water, chemical dust suppressants, or other measures have been applied to reduce dust to the limits set forth in **AQ-C4**.

o) Diesel Fired Engines

(1) 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.

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

(3) All large construction diesel engines, which have a rating of 50 hp or more, shall meet, at a minimum, the Tier 1 ARB/EPA certified standards for off-road equipment unless certified by the on-site AQCMM that a certified engine is not available for a particular item of equipment. All large construction diesel engines, which have a rating of 50 hp or more that do not have an EPA Tier 1 particulate standard (50 to 175 hp

engines) and do not meet Tier 2 particulate standards, shall be equipped with catalyzed diesel particulate filters (soot filters), unless certified by engine manufacturers or the on-site AQCMM that the use of such devices is not practical for specific engine types.

Where mitigation measures identical to or similar to those provided in (a) through (o) are required in District Rules 8021 through 8081, the most stringent requirement shall apply and be identified in the CMP; except when the requirements listed in (a) through (o) would conflict with the implementation and compliance with a District rule requirement. Any conflict between mitigation measures (a) through (o) and District Rules 8021 through 8081 will be identified in the CMP.

Verification: In a monthly report, the project owner shall provide the CPM a copy of the construction mitigation report and all diesel fuel purchase records, including quantity purchased, which clearly demonstrates compliance with condition **AQ-C3**.

AQ-C4 No construction activities are allowed to cause visible dust emissions at or beyond the project site fenced property boundary or the boundary of any adjacent property owned by the project owner. No construction activities are allowed to cause visible dust plumes that exceed 20 percent opacity at any location on the construction site. No construction activities are allowed to cause any visible plume in excess of 200 feet beyond the centerline of the construction of linear facilities.

Verification: The on-site AQCMM shall conduct a visible emission evaluation at the property boundary, or 200 feet from the center of construction activities at the linear facility, or adjacent to occupied structures, each time he/she sees excessive fugitive dust from the construction or linear facility site. The records of the visible emission evaluations shall be maintained at the construction site and shall be provided to the CPM in a monthly report.

AQ-C5 During site mobilization, ground disturbance, and grading activities, the project owner shall limit the fugitive dust causing activities (i.e. scraping, grading, trenching, or other earth moving activities) to a twelve-hour per day schedule. Short excursions to this twelve-hour per day limit may be allowed, with CPM approval, if the site conditions and construction activities are such that this will not cause significant construction dust impacts.

Verification: The project owner shall provide records of compliance as part of a monthly report.

AQ-C6 The project owner shall provide emission reduction credits to offset the project's VOC, PM_{10}, and SO_2 emissions. The quantity of emissions to be offset are 22,137 lbs of VOC, 53,460 lbs of PM_{10} and 8,760 lbs of SO_2. The following VOC ERC Certificates shall be used in whole or part to offset the VOC emissions at a 1:1 ratio; C-539-1, C-552-1, C-554-1, C-553-1, C-1963-1, and N-389-1. The following SO_2 ERC Certificates shall be used in whole or part to offset the PM_{10} and SO_2 emissions; C-531-5, N-374-5, and S-1964-5. The SO_2 emissions will be offset at a 1:1 ratio. The PM_{10} emissions shall be offset using the SO_2:PM_{10} interpollutant offset ratio of 1.2:1, which has been determined by

the SJVAPCD to be appropriate for this project. The project owner shall provide additional PM_{10} and/or SO_2 ERCs in order to provide a 1:1 offset of the project's PM_{10} emissions, incorporating the 1:2:1 SO_2 for PM_{10} interpollutant offset ratio, and SO_2 emissions. The quantity of additional ERCs required is 7,693 lbs of PM_{10} ERCs, or 9,231 lbs of SO_2 ERCs, or a combination of PM_{10} and SO_2 ERCs that equal 7,693 lbs after applying the interpollutant offset ratio of 1.2:1 to any SO_2 ERCs being proposed. The project owner shall obtain these additional ERCs at a minimum in the form of a binding option agreement.

The ERCs can be adjusted from one calendar quarter to another calendar quarter in accordance with SJVAPCD regulations in order to achieve a 1:1 offset ratio proposal for each calendar quarter.

Revisions to the offsetting proposal, and the specific ERCs used to offset the project, are allowed as long as these revisions will not reduce the VOC, PM_{10} or SO_2 emission offsets below a 1:1 offset ratio of allowable annual project emission levels. Revisions to the offsetting proposal shall be provided to the CPM for review and approval prior to ERC surrender.

Verification: At least 60 days prior to commencing turbine first fire, the project owner shall surrender the identified ERC certificates and in the amounts shown in **AQ-C6** to the District and provide documentation of that surrender to the CPM. The project owner shall provide documentation of the necessary additional ERCs to the CPM within 90 days of the project approval and no later than the beginning of construction.

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BIOLOGICAL RESOURCES

Testimony of Rick York

INTRODUCTION

This section of the Initial Study analyzes the potential impacts to biological resources from the construction and operation of the proposed Modesto Irrigation District's (MID) Electric Generating Station (MEGS) project in Ripon, California. The primary focus is on potential impacts to state and federally listed species, species of special concern, riparian areas, wetlands, and other areas of critical biological concern. This document presents information regarding the affected biotic community, the potential environmental impacts associated with the construction and operation of the proposed project, and where necessary, specifies mitigation planning and compensation measures to reduce potential impacts to less than significant levels.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

Staff is charged with evaluating whether the project as proposed has a substantial adverse impact on the environment or public health and safety. Staff has identified the following LORS as useful as significance criteria for evaluating whether the project as proposed will have a substantial adverse impact on biological resources.

FEDERAL

Endangered Species Act

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 protection of threatened and endangered plant and animal species, and their critical habitat.

Migratory Bird Treaty Act

Title 16, United States Code, sections 703 through 712, prohibits the take of migratory birds, including nests with viable eggs.

STATE

California Endangered Species Act

Fish and Game Code, sections 2050 through 2098, protects California's rare, threatened, and endangered species. California Code of Regulations, Title 14, sections 670.2 and 670.5, lists California species designated as rare, threatened or endangered.

Migratory Bird Protection

Fish and Game Code section 3513 protects California's migratory 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.

Fully Protected Species

Fish and Game Code, sections 3511, 4700, 5050, and 5515, prohibits take of animals that are designated as Fully Protected in California.

Significant Natural Areas

Fish and Game Code, sections 1930 through 1933, designates certain areas such as refuges, natural sloughs, riparian areas and vernal pools as significant wildlife habitat.

Native Plant Protection Act of 1977

Fish and Game Code, section 1900-1913, designates state rare, threatened, and endangered plants.

LOCAL

San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP)

The SJMSCP (SJCOG 2000) includes habitat compensation requirements for take of federal special status species and their habitat in accordance with the Federal Endangered Species Act Section 10(a)(1)(B), 16 U.S.C.§1539(a)(1)(B). The SJMSCP also prescribes protection and mitigation measures approved by the U. S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG). Direct consultation with USFWS and CDFG may not be necessary based upon MID's participation in the SJMSCP process which is administered by the San Joaquin County Council of Governments (Parks 2003). Participation in the SJMSCP program replaces the need for an incidental take permit from CDFG and USFWS.

SETTING

The proposed project would be located in the City of Ripon in San Joaquin County, California. Historically, the San Joaquin Valley consisted of a variety of natural habitats that supported numerous plant and animal species. However, since the turn of the century many of the valley's original natural communities within the valley have been converted to urban or agricultural land uses. Remaining areas of natural vegetation are fragmented and rarely found as large contiguous areas. These remaining natural areas represent less than five percent of the total area within the San Joaquin Valley (USFWS 1998). The loss and fragmentation of habitat has resulted in the elimination of many species of wildlife and the reduction of populations of many other species. A list of sensitive species that could occur in the vicinity of the proposed MEGS facility is provided in **Biological Resources Table 1**.

BIOLOGICAL RESOURCES Table 1
Sensitive Species Known to Occur in the Vicinity
Of the Proposed MEGS Facility

SENSITIVE PLANTS	STATUS*
Big tarplant (*Blepharizonia plumosa* ssp. *plumosa*)	FSC/List 1B
Brittlescale (*Atriplex depressa*)	FSC/List 1B
Delta button celery (*Eryngium racemosum)*	FSC/CE/List 1B
Diamond-petaled California poppy (*Eschscholzia rhombipetala*)	FSC/List 1B
Greene's tuctoria (*Tuctoria greenei*)	FE/CR/List 1B
Legenere (*Legenere limosa*)	FSC/List 1B
Round-leaved filaree (*Erodium macrophyllum*)	List 2
San Jacinto Valley crownscale (*Atriplex coronata* var. *notatior*)	FE/List 1B
SENSITIVE WILDLIFE	**STATUS***
Swainson's hawk (*Buteo swainsoni*)	CT
Burrowing owl (*Athene cunicularia*)	CSC
White-tailed kite (*Elanus leucurus*)	CFP
Western yellow billed cuckoo (*Coccyzus americanus occidentalus*)	CE
Tricolored blackbird (*Agelaius tricolor)*	CSC
Aleutian Canada goose (*Branta canadensis leucopareia*)	FD
California tiger salamander (*Ambystoma californiense*)	CSC
Riparian wood rat (*Neotoma fuscipes riparia*)	PE
Riparian brush rabbit (*Sylvilagus bachmani riparius*)	CE
San Joaquin kit fox (*Vulpes macrotis mutica*)	FE/CT
Conservancy fairy shrimp (*Branchinecta conservatio*)	FE
Vernal pool fairy shrimp (*Branchinecta lynchi*)	FT
Vernal pool tadpole shrimp (*Lepidurus packardi*)	FT
California linderiella (*Linderiella occidentalis*)	CSC
Valley elderberry longhorn beetle (*Desmocerus dimorphus dimorphus*)	FT
Molestan blister beetle (*Lytta moesta*)	FSC

(Source: California Department of Fish and Game 2003)

***Status Legend:** List 1B = CNPS List 1B - Plants rare, threatened or endangered in California and elsewhere (California Native Plant Society 2001), List 2 = CNPS List 2 - Plants rare, threatened, or endangered in California, but more common elsewhere. CSC = State Species of Concern (California Department of Fish and Game 1992), FSC = Federal Species of Concern, FD = Federally De-listed (Recovered), FE = Federal listed Endangered, FT = Federal listed Threatened, PE = Proposed Endangered, CE = State listed Endangered; CT = State listed Threatened and CFP = California Fully Protected.

POWER PLANT FACILITY

Modesto Irrigation District proposes to build a 95-megawatt natural gas-fired power plant in an industrial area in the City of Ripon. The proposed power plant would be a peaking facility located on a 12.25-acre parcel in southern Ripon, at the intersection of South Stockton Avenue and Doak Boulevard. The power plant would occupy 8 acres within a 12.25-acre parcel. The proposed project site has had various agricultural uses and has been routinely plowed and cleared. This has not stopped the common California ground squirrel (*Spermophilus beecheyi*) from digging numerous burrows on the project site. These small mammals are prey to a variety of predatory species including the Swainson's hawk (State Threatened), the burrowing owl (State Species of Concern), the white-tailed kite (State Fully Protected), and the red-tailed hawk, so the

project site is foraging habitat for these species. The California ground squirrel burrows could be of interest to the burrowing owl since this ground nesting owl will utilize squirrel burrows and other types of holes for roosting and nesting.

PROJECT LINEAR FACILITIES

The project's proposed gas pipeline, electric transmission line, and water supply pipelines would all be quite short and located in previously disturbed and/or paved areas. There are no biological resources issues related to the project's linear facilities since no biological resources currently exist within or immediately adjacent to the proposed construction areas/routes.

Gas Pipeline

Natural gas would be delivered to the project site via a new 0.25-mile pipeline that would connect to an existing PG&E gas main north of the project site on South Stockton Avenue near the junction with 4th Street in Ripon. The new gas pipeline would be constructed within the South Stockton Avenue right-of-way.

Transmission Line and Fiber Optic Communication Line

The proposed transmission line connection would be to the 69-kV system at the existing Stockton Substation approximately 0.25 miles northeast of the proposed MEGS project site. Connection of the proposed power plant to the Stockton Substation would require the addition of two bays within the existing substation facility to accommodate the new power plant. Approximately 7 new wood or metal transmission line poles would need to be constructed to connect the new power plant to the substation. A new fiber optic communications cable would also be placed on the new transmission line poles.

Water Supply Pipelines, Stormwater Discharge Pipelines, Potable Water Pipeline, Sanitary Sewer Pipeline, and Firewater Pipelines

The proposed power plant would utilize raw water from the City's non-potable water system. Water for cooling, process water, and sanitary uses would be provided via a new pipeline constructed by the City of Ripon. The proposed water pipeline would be routed within South Stockton Avenue directly east of the project site. The quality of the non-potable water supply is good for industrial uses; however it is not suitable for potable uses. In April 2003 the City of Ripon began construction of a City improvement project for the extension of South Stockton Avenue and Doak Boulevard near the MEGS site. The City is installing potable and non-potable water lines, sanitary sewer lines, and a stormwater system within these streets (MID2003a). The City of Ripon anticipates that the improvements along South Stockton Avenue will be completed during the fall of 2003 (Data Request Response 58, MID2003l). For the MEGS project, MID would construct potable and non-potable water supply, and stormwater discharge pipelines to interconnect to City utility services tap lines. These tap lines would be located adjacent to South Stockton Avenue and Doak Boulevard. Specifically, MID would construct a 3-inch diameter potable water pipeline, a 6-inch diameter non-potable water pipeline, an 8-inch diameter sanitary sewer line, two 10-inch diameter firewater pipelines, and two 12-inch diameter stormwater discharge pipelines.

IMPACTS

The following Environmental Checklist identifies potential impacts to biological resources. Following the table is a discussion of the potential impacts and a discussion of proposed mitigation measures, if necessary.

ENVIRONMENTAL CHECKLIST	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
BIOLOGICAL RESOURCES -- Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?		X		
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service?				X
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?				X
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?		X		
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				X
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				X

IMPACTS DISCUSSION

Staff's Environmental Checklist responses are discussed below:

a) Effect on Sensitive Species: Less than Significant Impact with Mitigation

MID has agreed to participate in the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP) compensation and mitigation process. This plan is administered by a Joint Powers Authority that is responsible for carrying out the requirements of the conservation plan. Mr. Gerald Park, Senior Regional Planner for the San Joaquin Council of Governments (SJCOG) has indicated (phone conversation with MID, August 6, 2003) that he has approved the

project for permitting under the SJMSCP. Mr. Parks will be sending a biologist to the proposed project site to perform a reconnaissance visit after which a list of relevant mitigation measures will be provided to MID and Energy Commission staff. The prescribed habitat compensation/mitigation fee must be provided to SJCOG prior to, or at the time of, issuance of any building permits. The total prescribed compensation fee would include the cost of SJCOG review and any site visit(s) (MID2003a). As of this Initial Study, the required compensation fee would be $845 per acre or $10,351.25 for the 12.25-acre project site. The final habitat compensation amount would be determined by the SJCOG when its analysis is completed. Participation in the SJMSCP process also requires implementation of various general and species-specific take avoidance measures (SJCOG 2000). All of these mitigation measures are provided as part of the SJMSCP process as a condition of project approval.

MID has also agreed to include in the project various species-specific mitigation measures identified in the SJMSCP plan, to avoid impacts to the following sensitive species:

Aleutian Canada goose (Federal De-listed – Recovered)
No Aleutian Canada geese were seen during December 2002 and January 2003 field surveys. During the winter, this subspecies may roost at the sewage treatment ponds and use the proposed project site for foraging, so habitat compensation is the proposed mitigation.

White-tailed kite (State Fully Protected)
This species could nest in the Stanislaus River riparian forest or the oak savannah south of the proposed project site; however none were seen during 2003 field surveys. The project site represents foraging habitat for this Fully Protected species. A 100-foot buffer would be maintained around occupied nest sites for a period that would include nest building and until fledglings have left the nest.

Swainson's hawk (State Threatened)
If a nearby tree becomes a nest tree during construction activities, then construction activities would not be allowed any closer than a distance of two times the drip line of the tree measured from the nest. As of this Initial Study, a Swainson's hawk pair appeared to be nesting either in the oak savannah or the Stanislaus River riparian corridor approximately 2500 feet southeast of the proposed power plant site.

Western burrowing owl (State Species of Concern)
Results from recent field surveys completed by the applicant's biologists and an Energy Commission biologist indicated that burrowing owls are currently not present on the project site. However, there are numerous California ground squirrel burrows on site which may be attractive to burrowing owls. MID would prefer to not use trapping, relocation, or the use of poisons and fumigation to remove ground squirrels from the project site. Poisoning may impact birds of prey or other animals that may prey upon the carcass and relocating would not be feasible since squirrels would likely reoccupy the site. It would be advisable to avoid active removal and allow squirrels and other small mammals to vacate the site during disking or become prey for scavenging wildlife.

If ground squirrel evacuation is not successful, the following alternatives would be employed:

1. During the non-breeding season (September 1st through January 31st) burrowing owls occupying the project site would be passively relocated. This would involve the installation of one-way doors to let owls out, but not allow them to re-enter the burrow.

2. During breeding season (February 1st through August 31st), 75-meter protective buffers would be maintained around burrows occupied by owls until a CDFG-approved biologist is consulted. Other actions could include passive relocation if it is determined that owls have not begun laying eggs, or postponing construction in the area until the young are fledged and no longer dependent on the nest burrow. Once fledglings are capable of independent survival or non-breeding adult owls have been excluded, the burrow can be destroyed.

MID also will provide habitat compensation for the loss of burrowing owl habitat which will be required by the San Joaquin Multi-Species Habitat Compensation and Open Space (SJMSCP) process.

MID would prepare and submit a report to SJMSCP Joint Powers Authority addressing any special status species issues encountered during construction and a discussion of any mitigation measures.

Staff concludes that the MEGS project would have less than significant impacts to sensitive species and their habitat with implementation of the MID-proposed mitigation strategy.

b) Effect on Riparian Habitat: Less than Significant Impact

The MEGS project would not directly affect any riparian habitat or sensitive natural communities identified in any local or regional habitat protection plans. However, a significant riparian area, the Stanislaus River riparian corridor, is located approximately 0.25 miles south of the proposed MEGS project site. Staff concludes that it is unlikely that the proposed project would directly impact the riparian habitat.

c) Effect on Wetlands:

There are no federally protected wetlands such as vernal pools and/or marsh habitat within or adjacent to the proposed MEGS project site. The closest significant wetland habitat, the Stanislaus River riparian corridor, is located approximately 0.25 miles south of the project site. Staff does not anticipate that the project would directly affect this nearby significant natural area. Staff concludes the MEGS project would not impact wetlands.

d) Interference with Wildlife Movement:

Sensitive species such as the Swainson's hawk, burrowing owl, white-tailed kite, and other sensitive bird species may nest on or near the MEGS project site. With implementation of various take avoidance measures and other mitigation staff concludes that the MEGS project would have less than significant impacts on these sensitive species.

e) Conflict with Local Policies:

Staff concludes that the proposed project would not conflict with any local biological resources policies or ordinances.

f) Conflict with Adopted Habitat Plans:

MID has agreed to abide by the terms and conditions of the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP) conservation plan. The SJMSCP includes requirements for take of state and federal special-status species and their habitat in accordance with the Federal Endangered Species Act section 10(a)(1)B and the State Endangered Species Act section 2081. The SJMSCP also includes prescribed compensation guidelines and sensitive species take avoidance and other mitigation measures approved by the USFWS and CDFG. MID's willingness to participate in the SJMSCP process replaces the need for direct consultation with the USFWS and CDFG.

Staff consulted Susan Jones (San Joaquin Valley Branch Chief, USFWS), Dan Gifford (Regional Biologist, CDFG) and Gerald Park (Senior Regional Planner for the San Joaquin County Council of Governments) and all (Jones 2003, Gifford 2003, and Park 2003) agreed that the SJMSCP compensation and mitigation process was appropriate for the MEGS project. Staff concludes that the proposed project would not conflict with any adopted habitat conservation plans.

CUMULATIVE IMPACTS

Cumulative impacts result from the incremental impacts of an action added to other past, present, and reasonably foreseeable future action, regardless of who is responsible for such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. By MID agreeing to participate in the SJMSCP mitigation process, staff concludes that the applicant/project owner has addressed all concerns regarding direct, indirect, and cumulative impacts to state and federally listed species and their habitats.

CONCLUSIONS

Construction and operation of the MEGS project would as proposed, including measures prescribed by the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan, result in less than significant impacts to biological resources.

STAFF'S PROPOSED CONDITION OF EXEMPTION

The following Biological Resources Condition of Exemption is proposed by staff:

COMPLIANCE WITH THE SAN JOAQUIN COUNTY MULTI-SPECIES HABITAT CONSERVATION AND OPEN SPACE PLAN (SJMSCP)

BIO-1 The project owner must provide written verification to the CPM that the project is in compliance with the SJMSCP prior to the start of any project-related construction activities.

Verification: No fewer than 60 days prior to any project-related site mobilization activities, the project owner must provide written verification to the CPM that the project has provided the required habitat compensation for the MEGS project to the San Joaquin Council of Governments, including a description of how the habitat compensation funds will be utilized.

REFERENCES

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San Joaquin Council of Governments (SJCOG). 2000. San Joaquin County Multi-Species Habitat Conservation and Open Space Plan. September 2000.

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CULTURAL RESOURCES

Testimony of Dorothy Torres

INTRODUCTION

The cultural resources section identifies potential impacts of the proposed Modesto Irrigation District Electric Generation Station (MEGS) to cultural resources. Staff considers the realm of potential "cultural resources" to include anything created or affected by human beings. The term "cultural resources", as defined in law, includes buildings, sites, structures, objects, and historic districts. If it appears that a project can not avoid a potential cultural resource, the cultural resources must be evaluated for eligibility to the California Register of Historic Resources (CRHR). The primary purpose of the cultural resources analysis is to ensure that all potential impacts are identified, and that conditions of exemption are set forth that ensure impacts to eligible cultural resources are mitigated below a level of significance under the California Environmental Quality Act (CEQA).

Energy Commission staff designated all of the CEQA checklist items for cultural resources as "less than significant with mitigation incorporation." A brief cultural overview of the project is provided, as are comments regarding selected CEQA checklist items with respect to cultural resources. The section concludes with the staff's proposed monitoring and mitigation measures with respect to cultural resources, with the inclusion of three recommended Conditions of Exemption.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

The following laws, ordinances, regulations, standards, and policies (LORS) have been identified by staff as relevant to assessing the significance of the impacts from the proposed project.

STATE

- California Code of Regulations, Title 14, section 4852 defines the term "cultural resource" to include buildings, sites, structures, objects, and historic districts.
- Public Resources Code, Section 5024.1 establishes a California Register of Historic Places; determines significance of and defines eligible resources.
- Public Resources Code section 5097.5 identifies any unauthorized removal or destruction of historic resources on sites located on public land as a misdemeanor. Public Resources Code section 5097.99 also prohibits obtaining or possessing Native American artifacts or human remains taken from a grave or cairn and establishes the penalty for possession of such artifacts with intent to sell or vandalize them as a felony. Public Resources Code Section 5097.98 defines procedures for the notification of discovery of Native American artifacts or remains. Public Resources Code section 5097.991 states that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated.

- Public Resources Code section 21083.2 states that the lead agency determines whether a project may have a significant effect on "unique" archaeological resources; if so, an EIR shall address these resources. If a potential for damage to unique archaeological resources can be demonstrated, the lead agency may require reasonable steps to preserve the resource in place. Otherwise, mitigation measures shall be required as prescribed in this section. The section discusses excavation as mitigation; limits the Applicant's cost of mitigation; sets time frames for excavation; defines "unique and non-unique archaeological resources;" and provides for mitigation of unexpected resources.
- Public Resources Code section 21084.1 indicates that a project may have a significant effect on the environment if it causes a substantial adverse change in the significance of a historic resource; the section further defines a "historic resource" and describes what constitutes a "significant" historic resource.
- CEQA Guidelines, Title 14, California Code of Regulations, section 15126.4(b), prescribes the manner of maintenance, repair, stabilization, restoration, conservation, or reconstruction as mitigation of a project's impact on a historical resource; discusses documentation as a mitigation measure; and discusses mitigation through avoidance of damaging effects on any historical resource of an archaeological nature, preferably by preservation in place, or by data recovery through excavation if avoidance or preservation in place is not feasible. Data recovery must be conducted in accordance with an adopted data recovery plan.
- CEQA Guidelines, section 15064.5 defines the term "historical resources," explains when a project may have a significant effect on historic resources, describes CEQA's applicability to archaeological sites, and specifies the relationship between "historical resources" and "unique archaeological resources." Subsection (f) requires that the lead agency make provisions for historical or unique archaeological resources accidentally discovered during construction.

LOCAL

The City of Ripon adopted General Plan 2035 in 1998. The Open Space and Conservation portion of that document, Goal C: Protect Archaeological Sites establishes policies to protect and maintain cultural resources. The City will not knowingly approve projects that may adversely affect important archaeological sites. Proposals for development that may affect archaeological resources will be referred to the California Historic Resources Information System (CHRIS) at Stanislaus State University. A site specific survey will be conducted to identify archaeological resources, and if archaeological materials are discovered during construction a professional will be consulted. If Native American remains are found, state law will be followed (City2003a, p. 5-1).

The Open Space and Conservation section of Chapter Five, acknowledges that archaeological sites can yield a variety of information about cultural, social or economic importance of past peoples or that they may have spiritual significance for Native Americans. It also cautions that the location of archaeological sites should remain confidential (City2003a, p. 5-7, 5-8).

Goal F of the Open Space and Conservation Section encourages the preservation of important historic resources and encourages requirements that will allow historic structures to be available for future use (City2003a, p. 5-2).

SETTING

The proposed power plant, water lines, gas line and electrical transmission lines will be located in the City of Ripon in Stanislaus County. The potable, non-potable water, storm wastewater and storm water lines will tap into City of Ripon utility services. In addition, a 0.25 mile gas supply line will connect with PG&E's existing main pipeline at Stockton Avenue and West 4th street. The electrical transmission line will be about 0.25 mile long and will connect with the Stockton Substation. The Applicant has also proposed a zero liquid discharge (ZLD) system. The ZLD would be located on the proposed project site (MID2003z Sup A, p. 2). The project area is in the central San Joaquin Valley. Ripon is located along the Stanislaus River (MID2003a, pp. 1-2, 1-3). The area's climate is characterized as Mediterranean, including hot dry summers and cool moist winters. The proposed project area in Ripon is primarily urban industrial.

The prehistory of the northern San Joaquin Valley is not well known. Few sites have been investigated and most of these date to the Late Prehistoric Period. Earlier sites are likely buried under later Holocene alluvium. The archaeological sites appear to reflect the same settlement and subsistence systems practiced by the Northern Valley Yokuts who occupied the area when the Spanish arrived in California. The northern San Joaquin Valley was originally covered by sloughs and marshes along the San Joaquin River. The Northern Valley Yokuts obtained fish and waterfowl from the river and marshes. Grass and tule seeds were important plant foods. Acorns from the valley oaks were also collected. The two most important food resources were salmon and acorns. Although deer, antelope, and elk were abundant, big game hunting was not a major food procurement activity. The Yokuts lived in permanent villages on mounds along the river. Gathering parties left the villages seasonally to collect seeds and acorns. The Northern Youkuts were organized into approximately 40 to 50 small tribelets that totaled about 18,000 individuals (MID2003a, p. 8.3-10 to 8.3-11). One would expect to find large prehistoric archaeological sites representing villages along rivers. Smaller sites with a more restricted range of artifacts and subsistence remains, representing resource gathering camps, could be found anywhere in Yokuts territory that was not subject to inundation.

During the nineteenth century, the drier areas of the northern San Joaquin Valley were used for ranching. Agricultural use of the region did not begin until 1867 when wheat cultivation became important (MID2003a, p. 8.3-12). In 1857 William Hiller Hughes purchased 160 acres of the area that was to become Ripon. As the first owner of the entire town site of Stanislaus City (later Ripon) he practiced carpentry and farming. In 1870, he acquired an additional 761 acres. Moreover, in 1872, he gave land to Central Pacific Railroad for right-of-way and a depot.

Historical sources indicate that much of the early settlement in Ripon during the 1860's occurred along the river (MID2003az, p. 285). Ferries across the Stanislaus River were an important method of transportation in the area, but they were replaced by the more efficient railroads. Completion of the Central Pacific Railroad through the valley in 1870

increased the scale of wheat production by reducing transportation costs. The Central Pacific Railroad was later incorporated into the Southern Pacific Railroad system and the Santa Fe Railroad acquired a parallel line through the valley. Towns, such as Ripon, developed along the rail lines and farms developed along the rivers and drainages (MID2003a, p. 8.3-16).

Much of the area around Ripon remains mostly agricultural today. Archaeological sites from the historical period that could be significant would include subsurface physical remains associated with nineteenth century residences, stores, and small scale manufacturing enterprises in towns, and farmsteads in rural areas.

IMPACTS

Following is the Environmental Checklist that identifies potential impacts in this issue area. Below the checklist are a discussion of each impact, and an explanation of the impact conclusion.

ENVIRONMENTAL CHECKLIST	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
CULTURAL RESOURCES – Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5?				X
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?		X		
c) Disturb any human remains, including those interred outside of formal cemeteries?		X		

DISCUSSION OF IMPACTS

A. Effect on Historical Resources:

I. Several subdivisions or housing tracts, including more than 100 houses, are located near the proposed project and linears. Five properties with above-ground resources of historic age have been identified within one-half mile of the power plant site and the linear routes in Ripon (MID2003a, p. 8.3-16 to 8.3-18). Department of Parks and Recreation (DPR) 523 forms were prepared for two churches and three houses that might be impacted by the project. These buildings have been evaluated by the Applicant and recommended as not eligible for the California Register of Historic Resources (CRHR). The City of Ripon was previously named Murphy's Ferry. Murphy's Ferry was established in 1865 on the Stanislaus River. The Ferry was very important to grain farmers. In 1867 Murphy was granted a petition that allowed him to move the location of the Ferry. The previous location of ferries will not be impacted by the project.

II. State Registered Landmark No. 436 is located within 0.5 mile of the project site. However the location of the first known archaeological colony that the

Landmark commemorates is six miles away from the project site (MID2003a, p. 8.3-17).

III. One potential historic resource was identified during the Applicant's field survey. (MID2003b, DPR 523 form). It appeared that if eligible to the California Register of Historic Resources, the agricultural setting of the residence might be impacted by the project. The residence at 920 Palm Avenue was evaluated by the Applicant as not significant based on the four criteria that would make it eligible to the National Register of Historic Places (NRHP) or the California Register of Historic Resources (CRHR).

Staff agrees with the Applicant's evaluation of the property under three of the CRHR and NRHP criteria. However, the eligibility of 920 Palm Avenue under Criterion B of the National Register or Criterion 2 of the CRHR was not as easy to evaluate, and additional information was requested from the Applicant to determine if the property was associated with anyone important in local history.

The residence at 920 Palm Avenue was built on land originally owned by William Hiller Hughes (W.H. Hughes). He was important in local history because he sold parcels of land in the late 1800's that became Stanislaus City and later the City of Ripon. By donating land for a railroad right-of-way and depot, W.H. Hughes contributed substantially to the development of Ripon (MID2003az, pp. 2 and 285-286).

Historical sources attribute the building of the house in 1919 to Hughes' son, Thomas Hughes. The residence was built long after the period of significance of William Hiller Hughes to the City of Ripon. The succession of later property owners can not be demonstrated to be important in local history (MID2003az, p.2). Thus, because the house has not been owned or lived in by an important historical figure, during the period that figure was significant in history, the project will not cause a substantial adverse impact to an historical resource.

B. Cause a Change in Significance of an Archaeological Resource: Less than Significant with Mitigation Incorporated

I. One partially below-ground resource of historic age has been recorded more than 0.5-mile from the proposed project (MID2003a, p. 8.3-16). It consists of foundation and structure remains and it will not be affected by the project.

II. One prehistoric archaeological site was identified and had been previously recorded. It is located more than one mile away from the project site. The archaeological site would not be affected by this project. The consultant for the Applicant carried out a pedestrian survey of the project site and proposed waterlines. The proposed gas line route and proposed transmission line route were surveyed on May 20, 2003. Soils that were visible due to trenching activity (for other City projects) in the vicinity were examined. No archaeological resources were identified as a result of the surveys (MID2003a, p. 8.3-17,18; MID2003am, Attach CR 41 p.1-2).

III. The proposed project will not impact any known archaeological resource, although there is a potential for discovering previously unidentified

archaeological resources during construction. Public Resources Code section 15064.5 (f) directs the lead agency to make provisions for historical or unique archaeological resources that are inadvertently discovered during project construction.

IV. The Applicant provided extensive recommendations for mitigation. Staff concurs with most of the recommendations. However, in some cases staff recommends a change to the proposed mitigation or additional mitigation. The discussion below provides staff's recommended changes that will ensure that impacts to archaeological discoveries would be mitigated to a level of insignificance. The Applicant recommends avoidance as the best mitigation. They define Environmentally Sensitive Areas (ESA) and suggest that the archaeologist and Project engineer demarcate an area to ensure that it is avoided. Staff agrees that this is an acceptable mitigation measure. Staff would also caution the applicant that at times avoidance may include measures such as avoidance by more than 100 feet or redesigning the project site or a linear route.

V. The Applicant recommends that prior to beginning construction near a designated ESA, the construction crew should be informed of the resource values involved and of the regulatory protection afforded to the resources. The Applicant recommends that the crew also be informed concerning procedures regarding relating to designated ESA's Moreover, the Applicant recommends that the crew be cautioned not to collect artifacts and asked to inform their supervisor should cultural remains be uncovered. Staff recommends that the project archaeologist develop a comprehensive training program that addresses the issues raised in working near an ESA and identification of cultural resources. During the training the construction workers should be advised of penalties in law for collecting artifacts. The training should also inform the construction crew that cultural resources personnel has the authority to halt construction, in the event of a discovery. The training program should be conducted prior to beginning ground disturbance rather than prior to beginning construction.

VI. Under Construction Monitoring, the applicant recommends that in the event of a discovery, "the AM should immediately notify the PA and Site Superintendent, who should halt construction in the immediate vicinity of the find, as necessary. The PA and the AM must have the ability to halt construction immediately, if there is a find. An archaeological site or human remains could easily be demolished in a matter of seconds.

VII. The applicant recommends that monitoring be conducted on a part-time basis, to be determined at the discretion of the assigned Project Archaeologist (PA) The Project Archaeologist or his/her designated Archaeological Monitor (AM) should conduct the recommended construction monitoring. A PA and AM can be the same person, if properly qualified. Staff recommends that a preliminary reconnaissance survey be conducted at the project site and along the linears. Initial ground disturbance and excavation should then be observed by the PA. After the PA has become knowledgeable regarding area of the project and

examined the excavated soils, the PA should determine the necessary level and locations of monitoring.

VIII. The applicant recommends that subsurface construction be monitored by an appropriately qualified archaeological monitor under the supervision of a Project Archaeologist who meets Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation as published in Code of Federal Regulations, 36 CFR Part 61. Staff agrees with this recommendation, but also recommends that, if monitoring is deemed necessary, any ground disturbance should be monitored, not only subsurface construction. The PA should at a minimum, meet The Secretary of the Interior's Standards. In addition, the PA should have a minimum of three years of experience in California conducting archaeological field work, data recovery, lab analysis, report writing, evaluation and other cultural resources related activities. The applicant recommends that the AM meet specific requirements. Staff recommends that any monitors have experience monitoring in California. Staff recommends that requirements for an archaeological monitor not be as stringent as the applicant suggests, as long as appropriate oversight is provided by the PA.

IX. The Applicant also recommended that an appropriate Native American monitor be present during any testing or data recovery of archaeological material that is Native American in origin. Staff recommends that a Native American monitor be retained to monitor in locations where Native American artifacts may be discovered.

Moreover, the Applicant recommends a preliminary assessment of the construction site for cultural resources. As construction begins a worker education program would be conducted to educate supervisors. The education program might be presented in the form of a video. Staff recommends that all new employees be trained regarding cultural resources during ground disturbance.

If archaeological materials are discovered, the Applicant recommends that construction be halted. Construction is not recommended in the vicinity of the find until the Project Archaeologist has examined the find. The Project Archaeologist would then record the discovery on Department of Parks and Recreation (DPR) Primary Record forms (Form DPR 523). The Applicant also recommends avoidance, if possible, mitigation by data recovery; curation, if necessary and the preparation of a final report (MID2003a, pp. 8.3-21 to 8.3-8.3-24).

On page 8.3-22, the applicant states that, "Under CEQA, a find would be considered significant (would be classified as an 'important archaeological resource') if it meets the necessary criteria for eligibility to the California Register of Historic Resources (CRHR). Staff cautions the applicant that under CEQA an archaeological discovery may also be considered significant if it meets the criteria for eligibility to the CRHR as an historical resource. It is not

necessary to classify it as an important archaeological resource for a cultural resource to be eligible to the CRHR.

Under the title “Mitigation Planning”, the applicant suggests a procedure for conducting mitigation in accordance with state and federal guidelines. The applicant states that, “If avoidance is not possible, the recovery of a sample of the deposit from which the archaeologist can define scientific data to address archaeological research questions should be considered an effective mitigation measure for damage to or destruction of the deposit.” Staff disagrees with this interpretation of effective mitigation. An effective mitigation would mitigate impacts to the data elements that make a cultural resource eligible to the CRHR. “A sample” may not be sufficient to address all data elements or research questions. Moreover, unusual discoveries that are not covered by the research design should not be ignored because they do not appear in a document.

On page 8.3-24, the applicant states that construction should resume at the site as soon as the field data collection phase of any data recovery effort is completed. While recognizing that construction needs to resume as soon as possible, staff asserts that construction should resume after mitigation has been adequately completed. This would frequently be after the completion of data recovery, however staff recommends making the decision to resume construction on a site by site basis(MID2003a, pp. 8.3-21 to 8.3-8.3-24).

The applicant also makes recommendation regarding curation. In addition to the applicants recommendations, staff recommends that items be curated in accordance with the State Historical Resouces Commission’ s, “ Guidelines for the Curation of Archaeological Collections” and Title 36 of the Federal Code of Regulations, Part 79.

The applicant proposes providing a “Report of Findings” that discusses archaeological activities in occur in relation to an archaeological discovery. Staff requires a report at the end of the project. The final cultural resources report would address all cultural resources activities conducted for the project, whether or not there was a discovery. In the field of archaeology, identifying the methods used to determine that nothing was present in a particular location is just as important as identifying the methods used to determine that there is something present. Archaeologists or historians who obtained information from the California Historic Information System (CHRIS) signed a document stating that if any reports were written as a result of work completed for the project area they were research at the CHRIS, a copy of that report would be provided to the CHRIS.

The City of Ripon provides for recognition and protection of cultural resources in their General Plan and will use a contract with California State University Stanislaus to obtain a cultural resources specialist who will conduct necessary monitoring and mitigation for the project. To ensure compliance with CEQA, if an archaeological site is discovered, it must be evaluated for eligibility to the CRHR. If the site is determined eligible, then either avoidance or data recovery

would be necessary and curation if materials are collected in accordance with the research design. The City of Ripon would conduct these efforts through their contract with CSU Stanislaus. The applicant has stated that they would reimburse the City of Ripon for expenses incurred under their contract with CSU Stanislaus for cultural resources activities (Reede, personnel conversation 8/21/03).

C. Disturb Human Remains: Less than Significant with Mitigation Incorporated

There is no record of interred human remains that would be disturbed by the proposed project. Public Resources Code section 15064.5 (f) instructs lead agencies to make provisions for historical or unique archaeological resources that are discovered during construction. In the event that interred human remains are encountered during project ground disturbance, mitigation will be achieved by following state law that requires notification of the county coroner and additional subsequent requirements. If the county coroner determines that human remains are Native American in origin, the Native American Heritage Commission will be notified and a Most Likely Descendant (MLD) will be referred to the project to make recommendations to the property owner regarding the appropriate treatment of the remains and associated grave goods.

CUMULATIVE IMPACTS

Cumulative impacts to cultural resources in the project vicinity may occur if subsurface archaeological deposits (both prehistoric and historic) and the setting of historic structures are affected by other projects in the same vicinity as the proposed project. Residential and commercial and industrial development is planned or is underway in the vicinity of portions the proposed project and linears. The following projects are planned within the project vicinity:

- City of Ripon Compressed Natural Gas (CNG) station at 240 Doak Blvd.
- City of Ripon Animal Shelter at 444 Doak Blvd.
- City of Ripon Corporation Yard Expansion at 620 Doak Blvd.
- Aartman Milk Transport Expansion, 805 S. Locust Ave.
- NuLaid Foods, Inc. Expansion, 200 Fifth St.
- Lombardy Estates Industrial Park, Doak Blvd between S. Stockton Ave. and S. Acacia Ave.
- Poppy Hills Residential Subdivision west of project site.
- Arrow Asphalt Project at 441 Doak Boulevard.
- Al Waggoner Project at 1012 S. Acacia Avenue.
- Doak Boulevard Extension between Vera Avenue and S. Stockton Avenue.
- S. Avenue Extension south to the new extension of Doak Boulevard.

Project proponents for these and future projects in the area can mitigate impacts to as yet undiscovered subsurface archaeological sites to less than significant levels.

Impacts can be mitigated by requiring construction monitoring, evaluation of resources discovered during monitoring, and avoidance or data recovery for resources evaluated as significant (eligible for the CRHR or NRHP). Impacts to human remains can be mitigated by following state law.

CONCLUSIONS

Based on the discussion above, the project as proposed, in conjunction with the mitigation set forth below will not cause any substantial adverse impact to any known cultural resources.

PROPOSED CONDITIONS OF EXEMPTION

CUL-1 The applicant shall employ a Cultural Resources Specialist to monitor the project. Additional monitors or technical specialists may be retained as necessary by the CRS.

- The project owner shall provide a copy of all cultural resource documents previously generated for this project to the City of Ripon and to the CRS.
- The project owner shall ensure that the CRS conducts a reconnaissance survey of the project site and linear foot print. After the survey has been conducted, monitoring activities shall be conducted at the discretion of the CRS.
- The CRS shall develop a cultural resources training plan and provide cultural resources training to all new employees during project ground disturbance. The project owner shall ensure that employees receive cultural resources training prior to beginning project related tasks. The training should focus on recognition of archaeological materials and reporting requirements if archaeological materials are discovered. The training may be presented in a video.
- The project owner shall provide a letter to the CRS, with a copy to the City of Ripon. The letter shall grant authority to the CRS and archaeological monitors to halt construction, if there is a discovery of archaeological materials.
- Data recovery or collection of materials should be conducted based on criteria generated in the research design (required by Cul-2). If the CRS determines that human remains have been discovered, the county coroner shall be contacted pursuant to state law.
- A Native American monitor shall be obtained, to monitor ground disturbance in areas where Native American artifacts may be discovered. Informational 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.

- 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 of exemption.
- The CRS and the project owner shall notify the City of Ripon by telephone or e-mail of any incidents of non-compliance with the conditions of exemption, permit conditions and/or applicable LORS upon becoming aware of the situation. The CRS shall also recommend corrective action to resolve the problem or achieve compliance with the conditions of exemption.
- During the ground disturbance phases of the project, the project owner shall provide copies of the weekly summary reports of monitoring logs, prepared by the CRS to the City of Ripon.

Verification: Prior to beginning the reconnaissance survey, the project owner shall provide the City of Ripon and the CRS with a copy of all cultural resources documents previously generated for this project. In addition, the project owner shall provide the City of Ripon with copies of the weekly summary reports of monitoring logs in a monthly report or in a manner acceptable to the City of Ripon.

CUL-2 Prior to the start of ground disturbance, the project owner shall ensure that the CRS prepares a Cultural Resources Monitoring and Mitigation Plan (CRMMP). The CRMMP shall identify general and specific measures to minimize potential impacts to sensitive cultural resources. Copies of the CRMMP shall reside with the project owner, CRS, each monitor, and the City of Ripon.

The CRMMP shall include, but not be limited to, the following elements and measures.

1. A general research design that includes a discussion of research questions and testable hypotheses applicable to the project area. A refined research design would be prepared for any resource where data recovery is required. The research design shall contain lists of artifact and other cultural materials that would be collected because they contribute information to the research questions.

2. A discussion of a preliminary reconnaissance survey of the project footprint conducted by the CRS. If avoidance measures are determined to be necessary by the CRS, a discussion of all 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 discussion 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.

3. A discussion of the requirement that all cultural resources encountered shall be recorded on a DPR form 523 and mapped (may include photos). In addition, all archaeological materials collected as a result of the

archaeological investigations (survey, testing, and data recovery) shall be curated in accordance with The State Historical Resources Commission's "Guidelines for the Curation of Archaeological Collections," into a retrievable storage collection in a public repository or museum. The public repository or museum must meet the standards and requirements for the curation of cultural resources set forth at Title 36 of the Federal Code of Regulations, Part 79.

4. A discussion of any requirements, specifications, or funding needed for curation of the materials to be delivered for curation and how requirements, specifications and funding shall be met. This shall include information indicating that the project owner will pay all curation fees unless a different agreement to pay curation fees is reached with the City of Ripon and state that any agreements concerning curation will be retained and available for audit for the life of the project.

Verification: At least 10 days prior to ground disturbance, the project owner shall provide the CRMMP to the City of Ripon for review and approval. The project owner shall also provide a letter that states that the project owner will pay all curation fees, unless a different agreement to pay curation fees is reached with the City of Ripon.

CUL-3 Whether or not there are discoveries, the project owner shall require that the CRS prepare a Cultural Resources Report (CRR) in Archaeological Resource Management Report format (ARMR). The CRR shall report on all field activities including dates, times and locations, findings, samplings and analysis. All survey reports, Department of Parks and Recreation (DPR) 523 forms and additional research reports shall be submitted to the City of Ripon, the California Energy Commission, the California Historic Resource Information System (CHRIS) and the State Historic Preservation Officer (SHPO).

Verification: The project owner shall submit the subject CRR within 90 days after completion of ground disturbance (including landscaping). Within 10 days after City of Ripon approval, the project owner shall provide documentation to the City of Ripon that copies of the CRR have been provided to the Energy Commission, SHPO, the CHRIS and the curating institution (if archaeological materials were collected).

REFERENCES

City2003a-City of Ripon. City of Ripon General Plan 2035. Approved September 15, 1998.

MID2003a-Modesto Irrigation District/Van Hoy (tn:28524). Submittal of the Small Power Plant Exemption for the Modesto Electric Generation Station 95 MW, natural gas fired simple cycle power plant. Submitted to CEC/Therkelsen/Dockets on 4/21/03.

MID2003b-CH2MHill/Salamy (tn28539). Appendix 8.3B-DPR Form 523 Submitted to CEC/Therkelsen/Dockets on 4/21/03.

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MID2003az-CH2MHill/Carrier. Data response set 1E (Supplemental Response to Data Request:42). Submitted to CEC/Dockets 7/21/03.

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ENERGY RESOURCES

Testimony of Kevin Robinson and Shahab Khoshmashrab

INTRODUCTION

The Energy Resources section examines energy use by the Modesto Irrigation District's proposed Electrical Generating Station (MEGS) to ensure that the MEGS consumption of energy will not result in significant adverse impacts on the environment. In this analysis, staff addresses the issue 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; and
- examine whether these adverse impacts are significant.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS

No federal, state, or local LORS apply to the efficiency of this project.

SETTING

Modesto Irrigation District (MID) proposes to construct and operate the 95 MW (nominal gross output) simple cycle MEGS power plant, providing peaking power to the MID power grid. (Note that this nominal rating is based upon preliminary design information and generating equipment manufacturers' guarantees. The project's actual maximum generating capacity will differ from, and may exceed, this figure.) Power from the facility will be sold directly to customers of MID that serve residential, commercial and industrial power users in the area (MEGS 2003a, SPPE §§ 1.2, 1.2.1). The MEGS will consist of two General Electric LM6000 Sprint combustion turbine generators (CTG) rated at 50 MW each. The CTG will utilize an electric water chiller at its inlet to maintain output and efficiency during periods of high ambient temperatures. The CTG will utilize water injection to reduce the formation of NOx and the stacks will have a selective catalytic reduction system to further control the emissions of NOx from the plant (MEGS 2003a, SPPE §§ 2.2, 2.3, 2.3.2).

IMPACTS

BACKGROUND

The 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 Warren-Alquist Act (Public Resources Code, § 25541) allows the Energy Commission to exempt electric generating power plants with generating capacity of up to 100 MW from the site certification process if it finds that the project construction and operation will not have substantial adverse impacts on the environment or energy resources. As illustrated below, MEGS will not have significant adverse impact on the energy resources, and thus qualifies for this exemption from the energy resources standpoint.

The inefficient and unnecessary consumption of energy, in the form of non-renewable fuels such as natural gas, constitutes an adverse environmental impact. "(Cal. Code regs., tit. 14, § 15126.4(a)(1)), (Cal. Code regs., tit 14, § 15000 et seq., Appendix F). 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.

ENERGY REQUIREMENTS

Any power plant large enough to fall under Energy Commission Siting jurisdiction will consume large amounts of energy. Under normal conditions, the MEGS will burn natural gas at a nominal rate up to 848 million Btu (MMBtu) per hour Lower Heating Value (LHV) (MEGS 2003a, SPPE § 2.3). This is a substantial rate of energy consumption, and holds the potential to impact energy supplies.

Under expected project conditions, electricity will be generated at a full load efficiency of approximately 39.6 percent Lower Heating Value (LHV) with the combustion turbines operating at full load (MEGS 2003a, SPPE § 7.1); compare this to the average fuel efficiency of a typical utility company baseload power plant at approximately 35 percent LHV.

The applicant has described its sources of supply of natural gas for the MEGS (MEGS 2003a, SPPE § 2.4). The project will burn natural gas delivered to the site by PG&E via a new connection to PG&E's main gas line 0.25 mile north of the project site (MEGS 2003a, SPPE § 2.4). The PG&E system is capable of delivering the required quantity of gas to the MEGS. Furthermore, the PG&E gas supply infrastructure is extensive, offering access to vast reserves of gas in Canada and the Southwest United States. The applicant plans to provide gas supplies through a combination of firm gas contracts as well as procuring additional supplies on the spot market. This source represents far more gas than would be required for a project this size. It is therefore highly unlikely that the MEGS could pose a substantial increase in demand for natural gas in California.

Natural gas fuel will be supplied to the project by a new 0.25 mile section of 8-inch pipeline connected to PG&E's existing main pipeline (MEGS 2003a, SPPE § 1.2). There is no real likelihood that the MEGS will require the development of additional energy supply capacity.

Compliance with Energy Standards

No standards apply to the efficiency of the MEGS.

Alternatives To Reduce Wasteful, Inefficient And Unnecessary Energy Consumption

The MEGS 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 generate peaking power to MID's customers (MEGS 2003a, SPPE § 1.2). The MEGS will be configured as two simple cycle power plants in parallel, in which electricity is generated by two natural gas turbine generators (MEGS 2003a, SPPE § 2.3). This configuration, with its short start-up time and fast ramping[1] capability, is well suited to providing peaking power.

EQUIPMENT SELECTION

Modern gas turbines embody the most fossil-fuel-efficient electric generating technology available today. The applicant will employ two General Electric LM6000 Sprint gas turbine generators (MEGS 2003a, SPPE § 2.3). The LM6000 Sprint gas turbine to be employed in the MEGS represents one of the most modern and efficient such machines now available. The Sprint version of this machine is nominally rated at 48 MW and 39.6 percent efficiency LHV at ISO[2] conditions (GTW 2002). Alternative machines that can meet the project's objectives are the GTX100 and FT8 which, like the LM6000, are aeroderivative machines, adapted from Alstom and Pratt & Whitney aircraft engines, respectively.

The Alstom GTX100 gas turbine generator in a simple cycle configuration is nominally rated at 43 MW and 37 percent LHV at ISO conditions (GTW 2002).

Another alternative is the Pratt & Whitney FT8 Twin Pac gas turbine generator in a simple cycle configuration that is nominally rated at 51 MW and 38 percent LHV at ISO conditions (GTW 2002).

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[1] Ramping is increasing and decreasing electrical output to meet fluctuating load requirements.

[2] International Standards Organization (ISO) standard conditions are 15°C (59°F), 60 percent relative humidity, and one atmosphere of pressure (equivalent to sea level).

Machine	Generating Capacity (MW)	ISO Efficiency (LHV)
GE LM6000 Sprint	**48.1**	**39.6 %**
ALSTOM GTX100	43.0	37.0 %
P & W FT8 Twin Pac	51.4	38.4 %

Source: GTW 2002

The LM6000 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.[3] 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. At temperatures above 90°F, the Sprint machine enjoys a four percent increase in both power output and efficiency (GTW 2000).

The GE LM6000 Sprint turbine selected has a fuel efficiency of 39.6 percent LHV in a simple cycle configuration at ISO conditions. The LM6000 Sprint offers spray intercooling, a technology enhancement which is not featured in the Alstom GTX100 and P & W FT8 Twin Pac. This technology increases generating capacity without consuming additional fuel. Any differences among the three in actual operating efficiency will 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.

Efficiency of Alternatives To The Project

Alternative Generating Technologies

The applicant addresses alternative generating technologies in its application (MEGS 2003a, SPPE § 9.6.2). Fossil fuels, fuel cells, solar, wind, hydroelectric, geothermal, ocean energy conversion, and biomass technologies are all considered. Given the project objectives, location and air pollution control requirements, staff agrees with the applicant that only natural gas-burning technologies are feasible at this time.

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). In order to maintain reasonable costs to its customers, where operating costs are critical in determining the economic efficiency of a power plant, MID is 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

[3] 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.

fuel costs, but at the same time sell for the lowest per-kilowatt capital cost. It is therefore to be expected that MID has chosen one of the most efficient generating technologies available.

Inlet Air Cooling

A further choice of alternatives involves the selection of gas turbine inlet air-cooling methods.[4] The two commonly used techniques are the evaporative cooler or fogger, and the chiller; both devices increase power output by cooling the gas turbine inlet air. A mechanical chiller can offer greater power output than the evaporative cooler on hot, humid days, but consumes electric 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.

MEGS proposes to employ electric chilling to cool the combustion turbine inlet air (MEGS 2003a, SPPE §§ 2.3, 2.3.1). Given the climate at the project site and the relative lack of clear superiority of one system over the other, staff agrees that the applicant's approach will yield no significant adverse energy impacts.

Conclusions on Efficiency of Alternatives

In conclusion, the project configuration (simple-cycle) and generating equipment (LM6000 Sprint gas turbines) chosen appear to represent an effective means of satisfying the project objectives. Short start-up time and fast ramping capability associated with this configuration will serve the project in meeting its objective of providing peaking power to MID's customers. While operation of the MEGS represents an adverse impact on energy resources, Energy Commission staff believes it does not constitute a significant impact because the project's maximum fuel consumption, 848 MMBtu per hour (LHV), is not a significant portion of natural gas supply to California. There are no feasible alternatives that could significantly reduce energy consumption.

CUMULATIVE IMPACTS

There are no nearby power plant projects that hold the potential for cumulative energy consumption impacts when aggregated with the project. Staff knows of no other projects that could result in cumulative energy impacts.

Staff believes that construction and operation of the project will not bring about indirect impacts, in the form of additional fuel consumption, that would not have occurred but for the project. The older, less efficient power plants consume more natural gas to operate than the new, more efficient plants such as the MEGS. The high efficiency of the proposed MEGS should allow it to compete very favorably, running at a high capacity

[4] 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.

factor, replacing less efficient power generating plants, and therefore not impacting or even reducing the cumulative amount of natural gas consumed for power generation.

CONCLUSIONS

The MEGS, if constructed and operated as proposed, would generate a nominal 95 MW of electric power with the maximum overall project fuel efficiency of 39.6 percent LHV. While it will consume substantial amounts of energy, the MEGS will do so in an efficient manner. It will not create significant adverse effects on energy supplies or resources, will not require additional sources of energy supply, and will not consume energy in a wasteful or inefficient manner. No energy standards apply to the project. Staff therefore concludes that the MEGS would present no significant adverse impacts upon energy resources.

PROPOSED CONDITIONS OF EXEMPTION

No conditions of exemption are proposed.

REFERENCES

GTW (Gas Turbine World). 2002. *Gas Turbine World 2001-2002 Handbook*, volume 22, p. 62.

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GEOLOGY, MINERAL RESOURCES, AND PALEONTOLOGY

Testimony of Patrick A. Pilling, Ph.D., P.E., G.E.

INTRODUCTION

In the geology, mineral resources, and paleontology section, staff discusses potential impacts of the proposed Modesto Electric Generation Station (MEGS) project regarding geologic hazards, geologic (including mineralogic), and paleontologic resources. Energy Commission staff's objective is to ensure that there will be no substantial adverse impacts to significant geological and paleontological resources during project construction, operation and closure. A brief geological and paleontological overview of the project is provided. The section concludes with staff's proposed monitoring and mitigation measures with respect to geologic hazards and geologic, mineralogic, and paleontologic resources, with the inclusion of conditions of exemption.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS

The applicable LORS are listed in the SPPE Application in Section 8.15.2 (MID, 2003a). Staff has identified the following LORS for geologic hazards and resources, and paleontologic resources, as useful as significance criteria for evaluating whether the project as proposed will have a substantial adverse impact on the environment.

FEDERAL

The proposed MEGS is not located on federal land and does not involve any federal actions, as such, the National Environmental Policy Act (NEPA) does not apply to the proposed project. In addition, there are no other federal LORS for geological hazards and resources or grading that apply to the proposed project.

STATE AND LOCAL

The project shall be designed and constructed to the 2001 edition of the California Building Standards Code (CBSC). The CBSC includes a series of standards that are used in project investigation, design and construction (including grading and erosion control).

PROFESSIONAL STANDARDS

The "Measures for Assessment and Mitigation of Adverse Impacts to Non-renewable Paleontologic Resources: Standard Procedures" (Society of Vertebrate Paleontology [SVP], 1995) is a set of procedures and standards for assessing and mitigating impacts to vertebrate paleontological resources. They were adopted in October 1995 by the Society of Vertebrate Paleontology (SVP), a national organization of professional scientists.

SETTING

The MEGS Project is a proposed 95 megawatt (MW) natural-gas-fired, simple-cycle generating facility to be located in Ripon, California on an undeveloped parcel of land. The proposed MEGS will be a peaking facility to supplement electric supply for MID.

MEGS will consist of:

- An 95 MW nominal, natural gas-fired, simple-cycle generating facility consisting of two combustion turbines;
- Approximately ¼-mile of new 69 kV sub-transmission line and fiber optic cable;
- Approximately ¼-mile of new natural gas pipeline; and
- Water supply and wastewater tap lines into existing lines below Stockton Avenue.

SITE GEOLOGY

The proposed MEGS is located within the Great Valley geomorphic province near the northern end of the San Joaquin Valley, California. This area within the Great Valley is characterized by low alluvial plains and fans adjacent to the Sierra Nevada mountain range to the east. Sediments present in the area are derived from streams draining the Sierra Nevada. Major geologic units in the vicinity of the plant site and linears include the Quaternary Modesto Formation and Holocene alluvial deposits (Wahrhaftig et al., 1993; Higgins and Dupras, 1993; and Wagner et al., 1990). The Quaternary Modesto Formation consists of gravel, sand, and silt that were deposited as a series of coalescing alluvial fans originating in the Sierra Nevada. The Holocene alluvial deposits consist of gravel, sand, silt, and clay from erosion of the Sierra Nevada. The Natural Resources Conservation Service (NRCS), formerly the Soil Conservation Service (SCS), has mapped the plant site as the Veritas fine sandy loam with a USCS classification of a silty sand (SM) to silty, clayey sand (SC-SM) and cemented soils below approximately 4-1/2 feet (McElhiney, 1992).

Geotechnical exploration at the plant site by the applicant generally encountered variable and inter-bedded silty sand; silty, clayey sand; clayey silt; sandy silt; poorly graded sand with silt, sandy clay; and silty clay (Kleinfelder, 2003). The fine-grained soils, including clayey silt, sandy silt, sandy clay, and silty clay, were generally light brown, brown, and gray brown; stiff to very stiff; and non-plastic or exhibited medium plasticity. The coarse-grained soils, including silty sand; silty, clayey sand; and poorly graded sand with silt, were generally classified as light brown, brown, and gray brown; medium dense to dense; and non-plastic or exhibited low plasticity.

FAULTING AND SEISMICITY

Energy Commission staff reviewed the California Geological Survey (CGS) publication "Fault Activity Map of California and Adjacent Areas with Locations and Ages of Recent Volcanic Eruptions," dated 1994 (Jennings, 1994), Geologic Map of California – San Francisco-San Jose Quadrangle (Wagner et al., 1991), Alquist-Priolo Zones (CGS, 2000), the Simplified Fault Activity Map of California (Jennings and Saucedo, 2002), the Database of Potential Sources for Earthquakes Larger than Magnitude 6 in Northern California (USGS, 1996), and Maps of Known Active Fault Near-source Zones in

California and Adjacent Parts of Nevada (International Conference of Building Officials [ICBO], 1998). The project is located within Seismic Zone 3 as delineated on Figure 16-2 of the CBSC.

No active or potentially active faults are known to cross the power plant footprint or the sub-transmission line and pipeline linears. The closest known active (Holocene age) fault is the Great Valley Thrust Fault System (Segment 7), approximately 15 miles west of the plant site. This fault is a blind thrust (no surface expression) and is divided into a number of segments. Segment 7 is the closest to the plant site; however, Segment 8 is only 6 miles further to the southwest. Staff has calculated an estimated deterministic peak horizontal ground acceleration for the plant site in the range of 0.2g. This estimate is based upon a moment magnitude 6.7 earthquake on Segment 7 of the Great Valley Thrust Fault. Other active faults within the vicinity of the site include the Greenville Fault, Ortigalita Fault, and the Calaveras Fault. The CBSC designates a minimum ground acceleration of 0.3g for the entire project. The closest pre-Holocene fault is located approximately 9 miles to the west of the plant site (Jennings, 1994). Pre-Holocene age faults are only considered potentially active.

On May 2, 2003, Staff visited the MEGS site and did not observe any evidence of surface faulting. The potential of surface rupture on a fault at the plant site is considered to be very low, since no active faults are known to have ruptured the ground surface within the limits of the project site.

LIQUEFACTION, SUBSIDENCE, HYDROCOMPACTION, AND EXPANSIVE SOILS

Liquefaction is a nearly complete loss of soil shear strength that can occur during an earthquake. During the seismic event, cyclic shear stresses cause the development of excessive pore water pressure between the soil grains, effectively reducing the internal strength of the soil. This phenomenon is generally limited to unconsolidated, clean to silty sand (up to 35 percent non-plastic fines) and very soft silts lying below the ground water table. The higher the ground acceleration caused by a seismic event, the more likely liquefaction is to occur. Severe liquefaction can result in catastrophic settlements of overlying structural improvements and lateral spreading of the liquefied layer when confined vertically but not horizontally. Exploration at the plant site by the applicant generally encountered variable and inter-bedded silty sand; silty, clayey sand; clayey silt; sandy silt; poorly graded sand with silt, sandy clay; and silty clay. The depth to ground water ranged from approximately 23 feet to 24 feet below the existing ground surface. Staff has evaluated liquefaction potential of the site soils based upon the limited geotechnical data available in the SPPE application. The results or Staff's analysis indicates there is a potential for liquefaction of thin, isolated layers of sand soils present at depth below the proposed plant site. As a result, detailed examination of the liquefaction potential of site soils, and associated structure foundation design, will need to be performed and included in the final geotechnical report required by **GEO-1**. All liquefaction analyses should be performed in accordance with **GEO-1**.

Dynamic compaction of soils results when relatively unconsolidated granular materials experience vibration associated with seismic events or even large, vibrating machinery. The vibration causes a decrease in soil volume, as the soil grains tend to rearrange into a more dense state (an increase in soil density). The decrease in volume can result in

settlement of overlying structural improvements. Since the portions of the site are underlain by surficial, loose to medium dense, silty sands and poorly graded sand, there is a moderate potential for dynamic compaction at the plant site; however, the potential for such compaction to significantly impair proper functioning of the proposed facilities is considered low as long as foundation preparation is performed in accordance with the requirements of the project geotechnical report.

Partially saturated soils can possess bonds that are a result of chemical precipitates that accumulate under semi-arid conditions. Such soluble compound bonds provide the soils with cohesion and rigidity; however, these bonds can be destroyed upon wetting. When destroyed, a substantial decrease in the material's void ratio is experienced even though the vertical pressure does not change. Materials that exhibit this decrease in void ratio and corresponding decrease in volume with the addition of water are defined as collapsible soils. Collapsible soils are typically limited to true loess, fine flash flood deposits, clayey loose sands, loose sands cemented by soluble salts, and windblown silts. Since the site is partially underlain by surficial, loose to medium dense silty sands and poorly graded sand, the potential for hydrocompaction is low to moderate in the surficial soils and low in other soils.

Ground subsidence is typically caused when ground water is drawn down by irrigation activities or municipal wells, such that the effective unit weight of the soil mass is increased, which in turn increases the effective stress on underlying soils, resulting in consolidation/settlement of the underlying soils. Subsidence may also be caused by regional tectonic processes. Typically, these forms of subsidence affect a large area. Since the MEGS will obtain cooling water from the City of Ripon non-potable water system, subsidence due to ground water withdrawal for the project is expected to result in no foundation settlement that would impact the plant. The MEGS plant site is not within a zone mapped by Bertoldi et al. (1991) as an area with ground subsidence greater than one foot due to water level decline. As a consequence of the above factors, subsidence is not expected to be of concern for this project.

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, capillary tension, water line breaks, etc. causes the clay soils to collect water molecules in their structure, which, in turn, causes an increase in the overall volume of the soil. This increase in volume can correspond to movement of overlying structural improvements. As reported in the boring logs, the site generally is underlain by variable and inter-bedded silty sand; silty, clayey sand; clayey silt; sandy silt; poorly graded sand with silt, sandy clay; and silty clay soils (Kleinfelder, 2003). A low to medium potential for expansion may be present in the clay soils given the limited geotechnical testing data available; however, the potential for such expansion to significantly impair proper functioning of the proposed facilities is considered low as long as foundation preparation is performed in accordance with the requirements of the project geotechnical report.

LANDSLIDES

Landslide potential at the MEGS plant site is negligible since the project is located on an alluvial plain that is essentially flat and there are no slopes adjacent to the site.

TSUNAMIS AND SEICHES

Tsunamis and seiches are earthquake-induced waves, which inundate low-lying areas adjacent to large bodies of water. The proposed MEGS plant site is situated approximately 68 feet above mean sea level. The San Francisco Bay and San Joaquin/Sacramento River Delta are located approximately 30 miles to the northwest of the site. No other large bodies of water are present near the plant site or associated linear facilities. As a result, the potential for tsunamis and seiches to affect the site is negligible.

GEOLOGICAL AND PALEONTOLOGICAL RESOURCES

Energy Commission staff have reviewed applicable geologic maps and reports for this area (Kohler, 2002; Larose et al., 1999; Jensen and Silva, 1988; Higgins and Dupras, 1993; DOGGR, 1982; and Tooker and Beeby, 1990). Based on this information and the information contained in the SPPE (MID, 2003), there are no known mineralogic resources located at or immediately adjacent to the proposed MEGS plant site, with the exception of the potential for aggregate production adjacent to the Stanislaus River (Jensen and Silva, 1988).

The applicant's consultant conducted a paleontologic resources field survey and a sensitivity analysis for the proposed MEGS and the proposed linear facility improvements to support the MEGS. No significant fossil localities were identified at the MEGS site or directly under the associated linear facilities; however, ichnofossils (trace fossils, such as burrows or root casts) were found within ¼-mile southeast of the plant site. Near-surface geologic units, including the Modesto Formation, were assigned a "high" sensitivity rating with respect to potentially containing paleontological resources. Paleontologic sites, serve as indicators in the sedimentary unit or formation in which they are found. As such, the Modesto Formation is considered fossiliferous and has a rating of high sensitivity for the potential occurrence of fossils in that unit. Based on the recommendations in the guidelines provided by the Society of Vertebrate Paleontology (SVP), if an area is determined to have a high potential for containing paleontologic resources, a program for mitigation is developed. Staff contacted the University of California, Berkeley, Museum of Paleontology (UCMP) for a literature review and a check of the Regional Paleontologic Locality Inventory (RPLI). In an e-mail dated June 18, 2003, UCMP verified that to date, no known paleontological resources have been identified at the plant site or along associated linear facilities; however, fossils were found in similar geologic units (Modesto Formation) approximately 1 mile south of the plant site near Salida. Based on a review of available information and since the geologic unit's exhibit a "high" sensitivity with respect to potential paleonotologic resources, staff concludes that the proposed MEGS project has high potential to expose significant paleontologic resources during ground disturbance activities and, therefore, requires a mitigation plan.

IMPACTS

Following is the Environmental Checklist that identifies potential impacts in this issue area. Below the checklist is a discussion of each impact, and an explanation of the impact conclusion.

ENVIRONMENTAL CHECKLIST	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant	No Impact
GEOLOGY - Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.				X
ii) Strong seismic ground shaking?			X	
iii) Seismic-related ground failure, including liquefaction?			X	
iv) Landslides?				X
b) Result in substantial soil erosion?				X
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentailly result in on- or off-site lanslide, lateral spreading, subsidence, liquefaction, or collapse the loss of topsoil?				X
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?			X	
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?				X
MINERAL RESOURCES - Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				X
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				X
PALEONTOLOGICAL RESOURCES - Would the project:				
a) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?		X		

DISCUSSION OF IMPACTS

Geology and Soils

A. Risk of Loss, Injury, or Death from Geologic Hazards

I. Rupture of Known Earthquake Fault

The proposed MEGS plant site and related linear facilities are not located on an active fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist.

II. Strong Seismic Ground Shaking: Less than Significant with Mitigation Incorporated

The MEGS project will be designed and constructed to conform to the CBSC (2001) requirements for Seismic Zone 3 and a horizontal peak ground acceleration value of up to 0.3g. Following CBSC requirements will mitigate this impact by requiring the Applicant to follow the specific recommendations of the CBSC and prepare the soils engineering report.

III. Seismic Ground Failure or Liquefaction: Less than Significant with Mitigation Incorporated

The variable nature of the sandy soils and moderate ground water levels indicate some potential for liquefaction and dynamic compaction based upon the limited geotechnical data available. The final soils engineering report and the liquefaction analysis required by CBSC guidelines should provide liquefaction potential calculations to accurately determine liquefaction potential.

IV. Landslides

Since the project facilities are located on a relatively flat alluvial plain, landslide potential is not a potential impact.

B. Soil Erosion

Soils have low susceptibility to erosion and construction activities will employ soil erosion mitigation measures.

C. Unstable Soils

The project facilities are not located on a geologic unit that is unstable or would become unstable as a result of the project.

D. Expansive Soils: Less Than Significant Impact with Mitigation Incorporated

The soils present at the MEGS site have been classified as having non-plastic to medium plasticity, given the limited geotechnical testing available. Any non-suitable soil would be removed during foundation and trenching activities and replaced with suitable engineered fill. CBSC guidelines require the preparation of a soils engineering report which will provide detailed information about the site's soils. If needed, engineering mitigation measures would be proposed to mitigate any soils impacts, however, this is not expected to be a significant issue.

E. Wastewater

The MEGS project would discharge wastewater to the City of Ripon sanitary and stormwater system. Additional information about wastewater can be found in the **Hydrology and Water Quality** section of this report.

Mineral Resources

A. Loss of Mineral Resources

There are no known geological or mineralogical resources located at or immediately adjacent to the proposed MEGS plant site or the linear facilities, except for the potential of aggregate resources adjacent to the Stanislaus River. Construction of the MEGS project will not affect aggregate resources.

B. Loss of Identified Mineral Resource Recovery Sites

There are no known geological or mineralogical resources located at or immediately adjacent to the proposed MEGS plant site or the linear facilities, except for the potential of aggregate resources adjacent to the Stanislaus River. Construction of the MEGS project will not affect aggregate resources.

Paleontology

A. Destruction of Paleontological Resource or Geologic Feature: Less Than Significant With Mitigation Incorporated

Based upon the literature and archives search, field surveys, and the preliminary geotechnical investigation for the project, the Applicant has proposed monitoring and mitigation measures to be followed during the construction of the plant and associated linear facilities. Energy Commission staff agrees with the Applicant that the scientific value of any vertebrate fossils encountered during construction of the plant and related features will be recovered with the implemented mitigation plan. Implementation of these measures will ensure that any paleontological resources will be properly recovered and curated per the guidelines of the Society of Vertebrate Paleontology (SVP).

CUMULATIVE IMPACTS

The MEGS site lies in an area that exhibits moderate geologic hazards and no known geologic or mineralogic resources at the plant site or linear facilities. Based on this information and the proposed mitigation of potential project specific impacts, it is staff's opinion that the potential for significant adverse cumulative impacts to the project from geologic hazards, and to potential geologic, mineralogic, and paleontologic resources from the proposed project, is low.

CONCLUSION AND RECOMMENDATIONS

The applicant's proposed monitoring scheme will ensure no substantial adverse impact to geological hazards and geological and paleontological resources for the project.

Certification of Completion of Worker
Environmental Awareness Program
Modesto Irrigation District's Electric Generation Station (03-SPPE-1)

This is to certify these individuals have completed a mandatory Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on Cultural, Paleontology and Biological Resources for all personnel (i.e. construction supervisors, crews and plant operators) working on-site or at related facilities. By signing below, the participant indicates that they understand 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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Cul Trainer: _____ Signature: _____ Date: ___/___/____

Paleo Trainer: _____ Signature: _____ Date: ___/___/____

Bio Trainer: _____ Signature: _____ Date: ___/___/____

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HAZARDOUS MATERIALS MANAGEMENT

Testimony of Geoff Lesh, P.E. and Rick Tyler

INTRODUCTION

This section provides a discussion of staff's evaluation of the potential impacts of the proposed MEGS associated with the handling of hazardous materials. Energy Commission staff's objective is to ensure that there will be no significant adverse impacts attributed to materials use or hazardous conditions during project construction, operation and closure. Energy Commission staff has determined that all CEQA checklist items for hazardous materials are either "less than significant impact" or "no impact." A brief hazards and hazardous materials overview of the project is provided, as are comments regarding selected CEQA checklist items with respect to hazards and hazardous materials. The section concludes with the staff's proposed monitoring and mitigation measures with respect to hazards and hazardous materials, with the inclusion of three Conditions of Exemption.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

A framework, based on environmental laws, ordinances, regulations and standards (LORS), exists to reduce risks of accidents and reduce routine hazards. The following federal, state, and local laws generally apply to the protection of public health and the environment. Their provisions have established the basis for staff's determination regarding the significance and acceptability of the MEGS Project.

FEDERAL

Superfund Amendments and Reauthorization Act of 1986

The Superfund Amendments and Reauthorization Act of 1986 (Pub. L. 99 - 499, §301,100 Stat. 1614 [1986]), also known as SARA Title III, and Clean Air Act (CAA) of 1990 (42 U.S.C. §7401 *et seq*. as amended), established a nationwide emergency planning and response program, and imposed reporting requirements for businesses which store, handle, or produce significant quantities of extremely hazardous materials. Section 112(F) of the CAA, 42 U.S.C. §7412(F) requires the states to implement a comprehensive system to inform local agencies and the public when a significant quantity of such materials is stored or handled at a facility through preparation of Risk Management Plans. These requirements of the CAA are reflected in the California Health and Safety Code, section 25531 *et seq*.

STATE

California Health and Safety Code, Section 25534 and 25535.1

The California Health and Safety Code, sections 25534 and 25535.1, direct owners of a stationary source, as defined in 40 C.F.R. §68.3, who store or handle acutely hazardous materials in reportable quantities, to develop a Risk Management Plan (RMP) and to submit it to appropriate local authorities, the United States Environmental Protection

Agency (USEPA), and the designated local administering agency for review and approval. The plan must include an evaluation of the potential impacts associated with an accidental release, the likelihood of an accidental release occurring, the magnitude of potential human exposure, any pre-existing evaluations or studies of the material, the likelihood of the substance being handled in the manner indicated, and the accident history of the material. San Joaquin County Department of Environmental Resources is the local administering agency to determine the requirement for an RMP.

California Health and Safety Code, Section 41700

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 Government Code, Section 65850.2

California Government Code, section 65850.2, restricts the issuance of an occupancy permit to any new facility involving the handling of acutely hazardous materials until the facility has submitted an RMP to the administering agency with jurisdiction over the facility. San Joaquin County Department of Environmental Resources is the local administering agency.

LOCAL

Uniform Fire Code

The Uniform Fire Code (UFC, 1997) contains provisions regarding the storage and handling of hazardous materials. These provisions are contained in Articles 79 and 80. These articles contain minimum setback requirements for the outdoor storage of ammonia.

California Building Code

The California Building Code also contains requirements regarding the storage and handling of hazardous materials. The Chief Building Official must inspect and verify compliance with these requirements prior to issuance of an occupancy permit.

SETTING

The proposed MEGS project site is on the corner of South Stockton Avenue and Doak Boulevard, in south central Ripon. The MEGS facility will occupy a total of approximately eight acres. The plant would occupy approximately six acres near the northern side of the site. An additional two acres would be needed for primary and emergency access to the plant and transmission lines. The project site is immediately adjacent to industrial properties. Currently, the proposed project site is undeveloped. Existing uses with the immediate area of the project site include industrial uses.

The primary fuel source for the MEGS Project is natural gas. Selective Catalytic Reduction (SCR) is to be used to reduce nitrogen oxide (NO_x) emissions from the combustion of natural gas in the combustion turbine. Aqueous ammonia will be used in the SCR process to convert the NO_x into nitrogen and water vapor, requiring the installation of one above-ground storage tank for aqueous ammonia. A number of other hazardous chemicals will also be used at the new MEGS facility in small quantities.

Proposed safeguards and measures to greatly reduce the opportunity for, or the extent of, exposure to hazardous materials or other hazards would be put in place.

IMPACTS

Following is the Environmental Checklist that identifies potential impacts in this issue area. Below the checklist is a discussion of each impact, and an explanation of the impact conclusion.

ENVIRONMENTAL CHECKLIST	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
HAZARDS AND HAZARDOUS MATERIALS – Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport or use of hazardous materials?		X		
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?		X		
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				X
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				X
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				X
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				X
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				X
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?				X

DISCUSSION OF IMPACTS

The basis for the impact determinations in the checklist is discussed below.

A. Transport or Use of Hazardous Materials

A variety of hazardous materials are proposed for storage and use during the construction of the project and for routine plant operation and maintenance. A list of the hazardous materials to be used during operation of the facility is included in Table 8.12-2 of supplement “A” to the SPPE ZLD amendment to the SPPE

application (MID2003z). One of these materials, aqueous ammonia, in addition to natural gas, are addressed below.

The hazard characteristics of ammonia and natural gas and their proposed use in substantial amounts during the operation of the plant pose the principal risk of off-site impacts. The potential threats from the other hazardous materials are not as significant as they are to be stored, handled or used for routine purposes in relatively smaller quantities at the facility and also have lower toxicity and/or environmental mobilities.

Aqueous Ammonia

Selective Catalytic Reduction (SCR) is proposed to reduce nitrogen oxide (NO_x) emissions to meet the plant's air quality permit requirements. Aqueous ammonia reacts with a catalyst to convert the NO_x into inert water vapor and nitrogen in the SCR process. The aqueous ammonia proposed for use is a solution of 29% ammonia and 71% water. Solutions containing more than 20% ammonia are considered regulated materials exceeding reportable quantities defined in the California Health & Safety Code section 25532(j). The proposed use of aqueous ammonia significantly reduces the risks that would otherwise be associated with use of the more hazardous anhydrous form of ammonia. The aqueous form eliminates the high internal energy associated with the more lethal anhydrous form, which is stored as a liquefied gas at elevated pressure. The high internal energy associated with the anhydrous form of ammonia can act as a driving force in an accidental release that can rapidly introduce large quantities of the material to the ambient air, where it can be transported in the atmosphere and result in high down-wind concentrations. Spills associated with the aqueous form are also much easier to contain than those associated with the anhydrous form. In addition, relatively slow mass transfer from the free surface of the spilled aqueous solution limits emissions from a spill of aqueous ammonia.

Aqueous ammonia is typically transported and handled safely and without incident. However, mishandling can result in impacts on public health, particularly during transfer from a delivery vehicle to a storage tank. It is during this transfer operation that the greatest risk of an accidental spill and release could occur. Thus, measures to prevent accidental releases and mixing with incompatible materials during transfer are extremely important and will be required as part of a Safety Management Plan for delivery of aqueous ammonia (see Condition of Exemption **HAZ-3**).

A significant number of modern power plants routinely use aqueous ammonia and the Energy Commission has licensed many such plants. Much of the risks associated with using ammonia are already reduced through MID's proposed use of the aqueous form of ammonia. Project compliance with LORS and staff's Conditions of Exemption make it unlikely that the use of aqueous ammonia will result in a significant threat to public health and the environment.

The transportation of hazardous materials including aqueous ammonia, particularly on California freeways, is routinely regulated and controlled by various federal and state laws, ordinances, regulations, and standards as discussed in the section titled Traffic and Transportation. There are a number of transportation accident studies that support the fact that such incidents and corresponding chances are highly dependent on the

type of roadway and surroundings. It has been reported that the truck accident frequency for all types of trucks, not exclusively for trucks transporting hazardous materials, is highest for an undivided multilane road at 5.44 accidents per million miles compared to 0.93 accidents per million miles for a freeway in rural California (Davies et. al., 1992). Staff considers the area in which Ripon is located is considered to be rural.

A recent study went even further by concluding that releases of hazardous materials on freeways rarely play a role in deaths or injuries (FMCSA, 2000). It is therefore reasonable to say that the likelihood of an accident involving a release of ammonia is probably higher on local roads than on freeways. This is supported in a report that observed that accident rates in general are typically much higher for two-lane rural roads compared to multilane highways (USDOT, 1998).

Staff has evaluated available routes for shipment of hazardous materials to the facility and concludes that the risk to the public from transportation of aqueous ammonia is less than significant with mitigation incorporated. Most of the transportation route is on State Route (SR) 99. Because the facility is located less than 1 mile from SR 99 it is very unlikely that a serious release would occur in the project area.

Staff therefore concludes that any potential adverse impacts from the transport of aqueous ammonia can be easily limited to a level of insignificance through the Applicant's conformance to applicable standards and laws, reinforced by staff's proposed Conditions of Exemption.

Natural Gas

The primary fuel source for the proposed project is natural gas. Natural gas poses a fire and/or explosion risk as a result of its flammability. While natural gas will be used in significant quantities, it will not be stored on-site. The risk of a fire and/or explosion from natural gas 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: 1) the use of double block and bleed valves for gas shut-off; 2) automated combustion controls; and 3) burner management systems (NFPA 1987). These measures will significantly reduce the likelihood of an explosion in gas-fired equipment. Additionally, start-up procedures will require air purging of the gas turbines prior to start-up, thus precluding the presence of an explosive mixture.

The facility will also require the installation of 0.25 mile of new natural gas pipeline that could result in accidental release of natural gas. In order to detect an accidental release of natural gas, both PG&E's main pipeline and the gas in the proposed pipeline will be odorized. PG&E will prepare an operations and maintenance plan that addresses both normal procedures and conditions, and any upset or abnormal conditions that could occur. The pipeline segments will be under a continuous cathodic protection system and PG&E will perform periodic cathodic protection surveys. There will be markers to identify the pipeline locations, as well as a posting of the toll-free number to call prior to any excavation that may occur around the pipeline

The proposed new pipeline segment will be designed, constructed, and operated in accordance with national safety codes and the safety standards for new gas pipelines stated in the California Public Utility Commission's General Order (G.O.) 112-E.

It is staff's belief that design and operation of these pipelines in accordance with applicable standards will result in an insignificant risk of impact to the public as a result accidental release of natural gas from the new pipelines.

B. Accidental Release of Hazardous Materials

Aqueous ammonia is being proposed for use in controlling NO_x emissions created during the combustion of natural gas at the facility. As stated in section A) above, the preparation of an Aqueous Ammonia Safety Management Plan will address potential impacts which may occur during the transfer of aqueous ammonia from the delivery vehicle to the storage tank.

Compliance with applicable LORS, existing safeguards, and staff's Conditions of Exemption will greatly reduce the opportunity for, or extent of, exposure to ammonia vapors by the public.

C. Emission or Handling Hazardous Substances Near a School

There are no known schools within a ¼ mile radius of proposed project.

D. Site Listed as Hazardous

The MEGS project is not located on a hazardous waste site.

E. Airport Hazard Area

The MEGS project is not located within an airport use plan.

F. Private Airstrip Hazard Area

There are no private airstrips in the vicinity of the project. Therefore, there are no impacts anticipated to a private airstrip.

G. Impair Emergency Response Plan

It appears that the construction and operation of the project would improve upon the reliability of the local power system and therefore benefit the local emergency response capabilities. No interference with emergency response plans or emergency evacuation plans is anticipated.

H. Exposure to Wildland Fires

The proposed site would be mostly paved and hence clear of substantial vegetation. The immediate area around the site could be landscaped with limited brush, shrubs, or trees and maintained and irrigated so as not to colonize the site.
Fire hazard from vegetation is not a concern since any landscaped trees, brush, or grass surrounding the MEGS site would be maintained and irrigated on a regular basis.

CUMULATIVE IMPACTS

Although the presence of the MEGS facility will increase the amounts of hazardous materials in the local project area, the quantities present and mitigating measures proposed will result in no expected significant cumulative impacts.

CONCLUSIONS

By incorporating the appropriate Conditions of Exemption, the routine transport to and use of hazardous materials at the MEGS project site will not result in significant impacts to the public or the environment.

PROPOSED CONDITIONS OF EXEMPTION

HAZ-1 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 30 days prior to receipt of aqueous ammonia onsite, 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-2 The project owner shall not use any hazardous material in reportable quantities, as specified in Title 40, Code of Federal Regulations, section 355.50, not listed included in Table 8.12-2 of supplement "A" to the SPPE ZLD amendment to the SPPE application (MID2003z), unless approved in advance by the CPM.

Verification: The project owner shall provide to the CPM, in the Annual Compliance Report, a list of hazardous materials contained at the facility in reportable quantities.

HAZ-3 The project owner shall develop and implement a Safety Management Plan for delivery of aqueous ammonia and submit the plan to the CPM for review and approval. 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 aqueous ammonia with incompatible hazardous materials.

Verification: At least sixty days prior to the delivery of aqueous ammonia to be used at the facility, the project owner shall provide a safety management plan as described above to the CPM for review and approval.

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HYDROLOGY AND WATER QUALITY

Testimony of Mike Krolak

INTRODUCTION

This analysis examines water resources issues related to the proposed Modesto Electric Generating Station (MEGS) project. The purpose of staff's analysis is to determine whether potential impacts from the project as proposed, are substantial and adverse to water resources. An evaluation of relevant laws, ordinances, regulations, and standards (LORS) has been included to assist in Staff's analysis. All potentially substantial impacts are evaluated and summarized in respect to significance thresholds established in the CEQA Environmental Checklist. The proposed MEGS project specifically involves the following topics:

- How the project's water demand affects the City of Ripon's water supplies;
- Whether construction or operation will lead to significant wind or water erosion and sedimentation; and
- Whether project construction or operation will lead to degradation of surface or groundwater quality.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

Staff is charged with evaluating whether the project as proposed has a substantial adverse impact on the environment or public health and safety. Staff has identified the following LORS as useful as additional significance criteria for evaluating whether the project as proposed will have a substantial adverse impact on water resources.

STATE

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act of 1967, Water Code Section 13000 et seq., requires the State Water Resources Control Board and the nine regional RWQCBs to adopt water quality criteria to protect the State's waters. These criteria include the identification of beneficial uses, narrative and numerical water quality standards, and implementation procedures. The criteria for the MEGS project area are contained in the Central Valley Region Water Quality Control Plan. This plan sets numerical and/or narrative water quality standards controlling the discharge of wastes to the State's waters. These standards are applied through the issuance of Waste Discharge Requirements (WDRs) by the RWQCB.

The SWRCB has also adopted a number of policies that provide guidelines for water quality protection. The principal policy of the State Board, which addresses the specific siting of energy facilities, is the Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Power Plant Cooling (adopted by the Board on June 19, 1976 by Resolution 75-58). This policy states that use of 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. This SWRCB policy requires

that power plant cooling water should come from (in order of priority): wastewater being discharged to the ocean, ocean water, brackish water from natural sources or irrigation return flow, inland waste waters of low total dissolved solids, and other inland waters. This policy goes on to address cooling water discharge prohibitions. Resolution 75-58 is not administered through a permitting process by the State Water Resources Control Board.

The Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65)

The Safe Drinking Water and Toxic Enforcement Act of 1986 (Health and Safety Code Section 25249.5 et seq.), prohibits the discharge or release of chemicals known to cause cancer or reproductive toxicity into drinking water sources.

LOCAL

City of Ripon Ordinances

Ordinance 13.04 requires facilities to apply for a water service permit in order to be connected to the city water service system.

Ordinance 13.05 lays out City of Ripon policy to use non-potable water wherever possible to conserve potable water supplies.

Ordinance 13.08 concerns connections to the City sewer system. This ordinance requires facilities to apply for the necessary permits prior to discharge to these facilities.

SETTING

The MEGS project would occupy eight acres within a 12.25-acre parcel in the City of Ripon. The project would be a peaking facility consisting of two combustion turbine generators to be integrated into MID's system. After construction, the additional 4.25 acres would be used for laydown and parking during construction, and would be available for other uses following construction.

GROUNDWATER

The project is underlain by the East San Joaquin Groundwater Basin. This basin is bounded by the Stanislaus River to the south, beyond which lies the Modesto groundwater basin. A cone of depression occurs in central Modesto, approximately 8.5 miles to the southeast, and another occurs west of Stockton, 17 miles to the north, however, local ground water at the MEGS site is virtually unaffected by these two cones of depression (MID2003a). Depth to ground water in the project area is approximately 20-40 feet, and ground water flows in a southwesterly direction.

The regional groundwater is contained in three primary fresh-water bearing formations: the Mehrten, Laguna, and Victor Formations. The Mehrten Formation is the oldest water bearing unit east of the San Joaquin River (MID2003l), located at depths of approximately 800 to 1,000 feet below ground surface (bgs). The Laguna Formation overlays the Mehrten and is generally unconfined.

The Victor Formation is the youngest of the three, consisting of gravel, sand, silt, and clay. This formation is the primary source of local ground water. The City of Ripon wells are drilled as deep as 462 feet bgs, and the intervals at which these wells are screened varies from 80 to 452 feet bgs (MID2003l).

As of 1998, the City of Ripon operated seven wells with a capacity of 5,750 gallons per minute (gpm), which could service up to 4,500 connections (MID2003a).

City of Ripon's Non-potable Water System

In order to maximize available potable water resources, the City of Ripon is currently developing a non-potable water system to meet industrial water demands within its service area. This system will utilize shallow wells that no longer meet the Primary Maximum Contaminant Levels (MCLs) for nitrate in drinking water, while deeper wells have been developed to supply potable water to City customers. Three primary non-potable wells will be associated with the system: MW-5, MW-6, and MW-11; however, due to concerns regarding local ground water remediation activities, MW-6 is not expected to be used at this time. MW-11 is slated to supply the system upon its inception, with MW-5 to be added as soon as electrical connections are made.

MW-11 has a capacity of 750 gpm, and MW-5 has a capacity of 1000 gpm, for a non-potable total of 1,750 gpm when fully operating.

Ground Water Contamination

The Central Valley Regional Water Quality Control Board (RWQCB) is currently supervising ground water remediation measures on three wells near the Nestlé facility, located within a half-mile of the MEGS project (DTSC2003a). The Department of Toxic Substances Control (DTSC) and the RWQCB have concerns whether operation of MW-6, the City of Ripon non-potable well closest to the remediation site, could alter localized ground water flow regimes, therefore disrupting the cleanup efforts. Matt Machado, the City Engineer for Ripon, has stated that the City has no plans to use MW-6 at this time (Machado2003).

SURFACE WATER

There are no surface water bodies on or immediately adjacent to the MEGS project site. The nearest surface water feature to the MEGS site is the Stanislaus River, located approximately 0.5 miles south of the project. The River is used for agricultural supply, and has been identified as a potential municipal source in the RWQCB Basin Plan (CVRWQCB1994).

The mapped FEMA floodplain for the Stanislaus River is shown in Figure 8-13.2 of the SPPE application. Neither the MEGS project area nor associated project linears are within the estimated 100-year flood zone.

WATER SUPPLY AND USE

The proposed MEGS project would use water from the City of Ripon's non-potable water system for cooling and process water demands, while domestic/sanitary water needs would be met from the City's potable water supply. The demand for the project during peak operating conditions would total approximately 167 gpm.

The project would be supplied by the non-potable water system via a pipeline currently under construction that will run parallel to Stockton Avenue, directly east of the project. Similarly, the project would tie into the potable water supply by connecting to the existing supply line that currently runs directly under Stockton Avenue. The linears required for these connections would not extend more than 30 feet from the project site to the respective pipeline, and excavation activities for these pipelines, if licensed, are anticipated to occur prior to the City paving South Stockton Avenue (MID2003a). The non-potable system upgrades are expected to be completed in the fall of 2003, and therefore would most likely be in place prior to operation of the MEGS project if licensed.

The project is expected to be supplied by well MW-11 (MID2003l) upon commencement of operation. However, well MW-5 will likely provide some amount of supply once it is connected to the non-potable system since the project will connect to the non-potable system rather than individual wells.

As originally proposed, the MEGS project would require an average of 122 gpm of non-potable supply with a peak demand of 244 gpm. However, the project has since been amended to include a zero liquid discharge (ZLD) system. This system will allow for recycling of waste streams for reuse within the facility, which will result in lower non-potable water demands of 83 gpm average and 167 gpm peak.

The City of Ripon has agreed to serve the MEGS project. The “Will Serve” letter from the City of Ripon is included in Appendix 8.13A of the SPPE application. The non-potable system will have a capacity of 750 gpm with MW-11 active, which will easily supply the 167 gpm required during peak conditions. When MW-5 is connected to the system, the capacity will increase to 1,750 gpm, meaning that during maximum summer conditions the project will require just under 10% of the system’s capacity.

SWRCB Resolution 75-58 requires that power plant cooling water should come from (in order of priority): wastewater being discharged to the ocean, ocean water, brackish water from natural sources or irrigation return flow, inland waste waters of low total dissolved solids, or other inland waters.

Such water supply alternatives were evaluated for the proposed project (MID2003a, Section 9) but were considered infeasible. Ocean water and wastewater discharges to the ocean are locally unavailable. Irrigation return flows are only available approximately eight months out of the year, and are of poorer quality which would require more water volume, treatment, and cycles of concentration to be usable for the proposed project. Adequate quantities of treated wastewater are not readily available. In addition, the City of Ripon does not produce wastewater treated to standards that allow its use in cooling towers, which would require additional pipelines and treatment measures.

The project’s use of non-potable water allows local potable water resources to be used for drinking water and other domestic uses. Use of non-potable water for non-potable uses is consistent with State LORS.

WASTEWATER DISCHARGE

Process Wastewater

Initially, the project proposed to discharge wastewater to the City of Ripon's wastewater system. However, a May 9, 2003 letter from the RWQCB to the applicant (CVRWQCB2003) stated the RWQCB's concern with that method of discharge.

The letter explained that the project's discharge would contain Total Dissolved Solids (TDS) concentrations of 891 mg/L, which would increase the concentration of TDS currently being discharged to the City's percolation/evaporation ponds. The concentration of nitrate that the project would discharge to the ponds would average approximately 264 mg/L. Ground water monitoring had just begun in the city and the RWQCB had discovered that local ground water had already been impacted by high levels of TDS and nitrate, and therefore any additional inputs of these constituents could potentially degrade local ground water further. The RWQCB staff would require a Report of Waste Discharge in order to permit the discharge to Ripon's ponds. This process would lead to the development of Waste Discharge Requirements, which could require extensive monitoring.

To address these concerns, the applicant has opted to install a zero liquid discharge (ZLD) system. The ZLD system will eliminate the wastewater discharge of the project. The applicant has proposed three options for waste discharge, included in **Soil & Water Resources Table 1** below.

Soil & Water Resources Table 1
Proposed ZLD Options

Option	Conceptual Description	Final Waste Product
1	Brine Concentrator/Spray Dryer	Dry Solid
2	Reverse Osmosis/Crystallizer	Highly Concentrated Liquid
3	Rev. Osmosis/Crystallizer/Filter Press	Damp Salt Cake

The applicant considers Option 1 the worst-case due to higher chemical use, generation of more waste, increased air emissions, and larger structures. Under this case, process wastewater would be routed to a 250,000 gallon wastewater storage tank. From there the wastewater would be sent to the brine concentrator/spray dryer, the final product resulting in a dry solid.

Option 2 uses a water softener to remove hardness and alkalinity in the wastewater prior to sending it to the reverse osmosis (RO) system. This setup reduces the amount of water that will be rejected form the RO system, which allows more water to be reused in the plant, and also reduces the amount of wastewater sent to the crystallizer. The crystallizer would produce a highly concentrated brine waste, which would be trucked off-site for treatment and disposal.

Option 3 is similar to Option 2, except that the highly concentrated brine waste is then sent to a filter press, resulting in a damp salt cake. Water recovered from the filter press is returned to the crystallizer for processing.

The final specifications of the ZLD system have not been determined by the applicant at this time. In the cases of Option 1 and 3, the solid or cake will be disposed of at an appropriately licensed landfill, and if Option 2 is selected, the highly concentrated waste will be required to be stored on-site with adequate secondary containment until it is trucked off-site to an appropriately licensed facility. In all cases, however, the wastewater discharge concerns are eliminated as there will no longer be a potential for ground or surface water contamination from process wastewater discharge during standard operating conditions.

Other Waste Streams

While process waste is the primary wastewater stream associated with the project, other discharges include domestic/sanitary waste, and stormwater.

The domestic waste will consist of extremely low volumes, approximately 1,000 gallons per month. This waste will be discharged to the City of Ripon's sewer system.

Stormwater from the project site will be routed to the City of Ripon stormwater system. The system includes an evaporation/percolation basin with a capacity of approximately 35 acre-feet, designed for a 10-year storm event (MID2003I). The system discharges to the Stanislaus River through a 54-inch outfall when necessary, a discharge covered by an NPDES Phase II permit through the RWQCB. Stormwater from equipment areas will be routed to an oil-water separator prior to discharge to the City's system.

IMPACTS

The Environmental Checklist below identifies impacts in the Hydrology and Water Quality issue area that could potentially result from the MEGS project. A discussion of each impact and an explanation of the impact conclusion follows the checklist.

ENVIRONMENTAL CHECKLIST	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
HYDROLOGY AND WATER QUALITY -- Would the project:				
a) Violate any water quality standards or waste discharge requirements?				x
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?			X	
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?			X	
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?				X
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?			X	
f) Otherwise substantially degrade water quality?			X	
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				X
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?				X
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?				X
j) Inundation by seiche, tsunami, or mudflow?				X

DISCUSSION OF IMPACTS

A. Violation of Water Quality Standards or Waste Discharge Requirements: No Impact

As originally proposed, the discharge from the project, which contained levels of TDS and nitrates higher than that of the receiving waste stream, had the potential to

degrade local ground water resources. To address this situation, the applicant changed the project design to include a ZLD system.

The applicant has identified three options for ZLD, outlined above in the **Process Wastewater** discussion. Whether the resultant waste from the project is a solid, a damp cake, or a low volume-high concentration liquid waste, the project will avoid discharges to land or water bodies. Whichever option the applicant adopts, in the absence of discharge to land or water, the project will have no impact to water resources.

Regarding construction and operational related impacts to groundwater and surface water quality, the project will implement best management practices (BMPs) to control pollution of ground and surface water. The project will comply with applicable stormwater requirements, such that no degradation of water quality as a result of stormwater runoff or erosion occurs. Staff addresses stormwater quality concerns regarding drainage alteration and stormwater in more detail within the following checklist sections.

B. Depletion of Groundwater Supplies or Recharge: Less than Significant

The project would use local ground water, but would not use wells that are currently used for potable water supplies. The wells intended to serve the project are operated by the City of Ripon and are dedicated to serving industrial customers. The water these wells produce exceeds drinking water standards for nitrate, and are also high in TDS.

This water would therefore be used in a beneficial manner, as usage of this source would keep local potable water supplies available for other uses. The ZLD system allows the project to utilize water at a greater efficiency, reducing project water demand by approximately 30%. No significant adverse impacts to ground water supplies or recharge are expected.

The Nestlé facility located in the project vicinity is currently remediating local ground water contamination via a pump and treat scheme. The ground water that is produced by the wells is treated to remove trichloroethylene, cis-1,2-dichloroethylene, and dibromochloropropane. After treatment, the water is disposed of without being reused.

The City of Ripon is developing an agreement with Nestlé to reuse the treated wastewater for industrial supply (Machado2003). At the June 13, 2003 Data Response Workshop, the City explained that the treated water would be added to the City's non-potable water system, making it available to the MEGS project. The addition of this source to the system would reduce the ground water pumping necessary to supply current industrial users, using the available non-potable waters in an efficient manner. Staff anticipates no adverse water resources impacts from the use of Nestlé treated wastewater to satisfy MEGS project process demands if that scenario should arise.

C. Substantial Alteration of Drainage Patterns or Causing Erosion: Less Than Significant

The construction and operation of the proposed MEGS project and associated linear elements would not impact the existing drainage pattern or involve impacts to any streams or other water bodies.

Construction of the proposed MEGS project would occur on 12.25 acres of land that has not been used for agricultural purposes since 1995. The proposed project will occupy eight acres that are currently undeveloped and zoned for heavy industrial use by the City of Ripon.

During construction and operation, stormwater runoff and erosion will be controlled through adherence to the conditions of a CVRWQCB Stormwater Permit. The permit requires two Stormwater Pollution Prevention Plans (SWPPPs), one for construction activities and one for operation activities, that specify measures that would be used to control erosion and sedimentation.
The SWPPPs would include the following measures:

- BMPs to minimize erosion during and after construction. Surface soil protection may include the use of mulches, synthetic netting material, riprap, and the compacting of native soil.
- Conduct all construction activities in accordance with California's General Permit for Storm Water Discharge Associated with Construction Activity, including the erosion control measures in the SWPPP and BMPs to reduce erosion and the transport of increased suspended sediment from construction areas.
- In the construction area soil should be graded and compacted to ensure that soil is not left in irregular piles that are more susceptible to water and wind erosion. Seeding will be performed in the areas where natural vegetation has been distressed or removed by construction activity.

Construction activities related to the gas and water pipelines would involve trenching, pipe installation, and backfilling. Specific BMPs that are appropriate to minimize wind and water erosion associated with these trenching and boring activities would be developed in accordance with a specific Erosion and Sedimentation Control Plan. Erosion and sediment controls would be implemented and BMPs would achieve compliance with the NPDES General Permit for Storm Water Discharge Associated with Construction Activity and all other applicable LORS.

The Applicant has indicated that adequate sedimentation and erosion controls will be employed, and has provided a draft Erosion and Sedimentation Control Plan for the construction phase of the project. The Applicant must provide these documents for all project phases to the appropriate authorities as required by law. Accordingly, the project's impact on drainage patterns and erosion will be less than significant.

D. Alteration of Drainage Resulting in Flooding: No Impact

As described above, the construction and operation of the MEGS project would not impact the existing drainage pattern or involve impacts to any streams or other water

bodies, nor would the proposed project result in substantial increases in surface runoff or cause flooding. The project is located outside of the 100-year floodplain for the Stanislaus River, and is therefore not expected to result in any flood events.

Stormwater discharges from the project will be routed to the City of Ripon's stormwater system. The evaporation/percolation pond is designed for a 10-year storm event with 35 acre-feet of capacity, and discharges to the Stanislaus River if capacity is reached. This system should provide adequate stormwater coverage for the facility, as the project should not significantly add to runoff in the project vicinity.

E. Excess Runoff or Stormwater Drainage: Less than Significant

As stated above, Stormwater discharges from the project will be routed to the City of Ripon's stormwater system. The evaporation/percolation pond is designed for a 10-year storm event with 35 acre-feet of capacity, and discharges to the Stanislaus River if capacity is reached. This system should provide adequate stormwater coverage for the facility, as the project should not significantly add to runoff in the project vicinity. In addition, the City indicated at the Data Response Workshop on June 13, 2003 that their system would be able to accommodate the MEGS project stormwater runoff.

F. Degradation of Water Quality: Less Than Significant

As described above, the proposed project's waste will be discharged in accordance with applicable laws and local permits.

The **Waste Management** section of the SPPE noted that DDT had historically been used on orchard crops in San Joaquin County. DDT is a persistent compound that can pose a serious threat to water quality and related biological habitat, as it binds strongly to soils and uses soil detachment as a primary pathway into ecological systems.

Waste Management staff proposed that a sampling plan be developed and executed to determine the possibility and/or magnitude of DDT contamination at the project site. An acceptable sampling plan was approved by Energy Commission and Department of Toxic Substances Control staff, and sampling was performed in late June of 2003. Results from the sampling were provided on July 16th, 2003, and the analysis concluded that the project site has not been significantly impacted by past agricultural practices, as 4,4-DDT levels were well below the EPA-designated Remediation Goals for industrial and residential soil. Please refer to the **Waste Management** section of this Initial Study for more information.

As stated in the **Ground Water Contamination** discussion above, the Central Valley Regional Water Quality Control Board (RWQCB) is currently supervising ground water remediation measures on three wells near the Nestlé facility, located within a half-mile of the MEGS project (DTSC2003a). If the project required the City of Ripon to pump at a much greater rate, it is possible that the contaminated plume could migrate and potentially impact drinking water supply wells.

Currently, the City of Ripon plans on using only MW-11 to service the non-potable system, with MW-5 coming online in the foreseeable future. The RWQCB does not identify operation of MW-11 as a potential impact to the cleanup efforts (Pierce2003), however, without accurate modeling available, it is difficult to predict the impacts of operating MW-5. It is possible that the City may reach an agreement to use Nestlé wastewater as described above under checklist section B, which could reduce the amount of additional ground water pumping necessary; however, this agreement is not final.

Since well water quality is a concern of the City of Ripon, staff is confident that the City of Ripon will consult with the RWQCB staff prior to the project using water supplied from sources other than MW-11, and that no significant groundwater contamination will result.

G, H, I, J. Housing in 100-Year Flood Zone: No Impact

The existing MEGS project footprint is not located within a Federal Emergency Management Agency (FEMA) designated 100-year flood zone. No housing or structures would be created that would impede or redirect 100-year flood flows. Stormwater discharge would be routed to the City of Ripon stormwater system, which has adequate capacity as described above, and therefore should not cause or contribute to flooding potential. As an inland project not near any large water body or hillslope, inundation by seiche, tsunami, or mudflow is not likely to occur.

CUMULATIVE IMPACTS

The project is not expected to contribute to cumulative hydrology or water quality impacts.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

San Joaquin County Public Works Department-1: Water Supply and Use, Page 2-2, paragraph 4, [states] "The average daily water demand for the MEGS is approximately 122 gallons per minute (gpm) and the approximate maximum daily water demand is 244 gpm." [This] statement is unclear as to the actual daily use. This should be corrected to reflect actual daily use.

Staff Response: *(This comment is directed towards the* ***Project Description*** *section of this document, but will be answered here since it pertains to water resources. In addition, the water usage rates noted in this comment refer to the demand identified by the applicant prior to proposal of a zero-liquid-discharge system. Implementation of this system will lower those rates to 83 gpm average and 167 gpm peak.)*

The MEGS project is designed to be a peaking facility, to be used on an as-needed basis; however, the project is seeking a license to operate up to 8,760 hours per year. Using the average water demand of 83 gpm, under the proposed operation plan, the project would be licensed to use approximately 0.37 acre-feet of water per day. If the project were to operate at the peak water usage (167 gpm) for 8,760 hours, the project would use approximately 270 acre-feet of water in one year.

CONCLUSIONS

The proposed MEGS project as proposed and regulated by the responsible government authorities would result in less than significant impacts to the public and the environment.

PROPOSED CONDITIONS OF EXEMPTION

WATER-1 The project owner shall install metering devices and record on a monthly basis the amount, source, and quality of water used by the project. Quality reports shall be submitted as they become available from the City of Ripon.

The report on the monthly water use shall include the monthly range and monthly average of daily usage in gallons per day, and total water used by the project on a monthly and annual basis in acre-feet.

Following the first full year of operation and in subsequent years, the annual summary will also include the yearly range and yearly average water use by the project.

The project owner shall notify the CPM in writing of any significant changes in the water supply for the project during construction or operation of the plant.

Verification: The project owner shall include water summary reports in the Annual Compliance Report for the life of the project. The CPM shall be notified at least 60 days prior to the effective date of any proposed changes to the water supply.

REFERENCES

CEC2003a - CEC/Reede (tn:28668). Issues Identification Report – POS. Submitted to CEC/Boyd/Pernell/Dockets on 5/9/03.

CEC2003c - CEC/Krolak (tn:28888). Report of Conversation with W. Wyels, T. O'Brien, RWQCB and Applicant's staff re: MID Ripon, Wastewater Issues – POS. Submitted to CEC/Dockets on 6/4/03.

CVRWQCB1994 - Central Valley Regional Water Quality Control Board. Water Quality Control Plan (Basin Plan). December 1994.

CVRWQCB2003 - Central Valley Regional Water Quality Control Board/O'Brien. Report Review, MID Electric Generation Station Project. May 9, 2003.

DTSC2003a - Department of Toxic Substance Control/Hume (tn:28705). Review of the AFC – POS. Submitted to CEC/Ringer/Dockets on 5/19/03.

Machado2003 - City of Ripon. Personal Communication with Marcus Pierce, Central Valley Regional Water Quality Control Board Staff. June 3, 2003.

MID2003a - Modesto Irrigation District/Van Hoy (tn:28524). Submittal of the Small Power Plant Exemption for the Modesto Electric Generation Station 95 MW, natural gas fired simple cycle power plant. Submitted to CEC/Therkelsen/Dockets on 4/21/03.

MID2003l - CH2MHILL/Carrier (tn:28904). Data Responses, Set 1A. Submitted to CEC/Reede/Dockets on 6/6/03.

MID2003z - CH2MHILL/Carrier. Supplement A - Zero Liquid Discharge Amendment. Submitted to CEC/Reede/Dockets on 6/20/03.

Pierce2003 - Central Valley Regional Water Quality Control Board. Personal Communication with Mike Krolak, CEC Staff. June 26, 2003.

LAND USE

Testimony of David Flores

INTRODUCTION

The land use analysis of the Modesto Irrigation District's Ripon Generation Station (MEGS) focuses on the project's compatibility with existing and planned land uses, and its consistency with applicable land use plans, ordinances and policies.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

The project site is located within the City of Ripon in San Joaquin County, which is situated in the southeastern portion of the San Joaquin Valley. Land use laws, ordinances, regulations and standards (LORS) applicable to the proposed project are contained in the City of Ripon's General Plan and Zoning Ordinance.

Staff has also addressed the San Joaquin County General Plan, since the proposed project site and linear facilities are very close to the unincorporated area within San Joaquin County.

CITY OF RIPON ZONING ORDINANCE

Zoning is the specific administrative tool used by a jurisdiction to regulate land use and development, and is one of the primary tools for implementing the goals and policies of the General Plan. Zoning is typically more specific than the General Plan and includes detailed land use regulations and development standards. The City's Zoning Ordinance divides the land in the city into zones that permit different types of uses and imposes development standards appropriate to the uses permitted in each zoning district. **LAND USE Figure 1** shows the zoning districts in the area of the proposed project site. The project site is located in the Heavy Industrial (M-2) zoning district for which the development of electrical utilities is a permitted use (Tyhurst, 2003).

CITY OF RIPON GENERAL PLAN

Land use is controlled and regulated by a system of plans, policies, goals, and ordinances that are adopted by the various jurisdictions with land use authority over the area encompassed by the proposed project. The general plan is a broadly scoped planning document and defines large-scale planned development patterns over a relatively long timeframe.

The Ripon General Plan includes specific policies to preserve and enhance existing development and to provide for orderly and appropriate new development of the City of Ripon (Ripon) through the year 2035. Actions and approvals required by the City of Ripon Planning Department must be consistent with the Ripon General Plan.

The Ripon General Plan covers the following elements of planning: community growth, community development (land use), housing, community services and facilities (including transportation, open space and hazards management), public safety, and environmental resources. Each element contains goals, policies, and implementation

measures that may be pertinent to the proposed project, including the linear transmission facilities.

The proposed project site exists within the geographic area named in the Ripon General Plan as the South Stockton Planning District, one of the eighteen geographic planning districts assessed in the Ripon General Plan. The land use designation for the project site is Heavy Industrial (HI). The HI designation allows for the siting of utility and linear facilities such as electric transmission lines and gas pipelines, public utilities, energy and infrastructure planning and economic development in an area zoned for industrial uses.

Analysis of land use policies for the proposed project focuses on the policies directly linked to the characteristics of the proposed project, such as the siting of a utility facility and linear features, energy and infrastructure planning, public utilities, land supply, and economic development. Land use policies applicable to the proposed project, which is within the South Stockton Planning District, include:

- Designate adequate land to meet residential, commercial, and industrial development needs.
- Designate adequate land intended for public and quasi-public uses to support existing and new residential, commercial, and industrial development.
- Urban development should be kept contiguous as possible to avoid premature urbanization of valuable farm land, promote resident convenience, and provide for economy in City Services.
- Assure economic viability of the community by retaining and renewing existing commercial and industrial uses and designating sufficient new commercial and industrial areas to meet future city needs.
- Encourage diversified industry and other job generating uses in the City.

LAND USE Figure 2 shows the Ripon General Plan's designated land uses for the project vicinity. Because a power plant is a permitted use for the land use designation and zoning within the City of Ripon, the proposed project does not require discretionary approval from the City of Ripon.

SAN JOAQUIN COUNTY GENERAL PLAN

Some unincorporated lands within San Joaquin County are located near the proposed project site, and proposed electrical sub-transmission line and water pipeline routes, although these facilities would be nearby rather than within any unincorporated lands. These lands consist of a mixture of residential farming units and agricultural land use designations provided by the San Joaquin County General Plan. Utility facilities are allowed in these General Plan designations and zoning districts. San Joaquin County would not require any permits, since the project would be located in the Ripon City limits.

SETTING

PROJECT LOCATION

MEGS Generation Site

The proposed project would be situated on a 12.25 acre site at the intersection of South Stockton Avenue and Doak Boulevard in the City of Ripon, located in San Joaquin County. The facility would occupy approximately six acres near the northern boundary of the site. The applicant has obtained a purchase option on the 12.25 acre site, which consists of four parcels of industrially zoned land. Currently the property is fallow. Previous use of the site included agricultural uses, although the parcel has not been farmed for approximately five years.

Contractor office areas, construction staging, laydown areas, and parking areas will be located adjacent to the south and west of the project on the 12.25 acre MID property, but outside the project's footprint.

Linear Facilities

The linear facilities for the project include an electrical sub-transmission line and natural gas pipeline segments. The proposed routes for the electrical sub-transmission line and natural gas pipeline line occur in existing public and private ROWs currently used for either the public streets, or utility conveyance. The location of these facilities are discussed further under separate heading.

In April 2003, the City of Ripon began construction on an improvement project for the extension of South Stockton Avenue and Doak Blvd near the MEGS site. As part of the project, the city will install potable and non-potable water lines, sanitary sewer, industrial wastewater and storm water systems within the proposed streets.

For the MEGS project, MID will construct potable and non-potable water supply tap lines and wastewater and storm water discharge pipelines to connect to the City utility service stubs at the property line.

Natural Gas

A new 0.25 mile long natural gas pipeline will be installed by PG&E from the project site north on South Stockton Avenue to 4th Street.

Electrical Transmission Line

The proposed electrical transmission interconnection will link MEGS to the MID power grid by connecting to the nearby Stockton Substation using a new double-circuit 69-kV transmission line running approximately 0.25 mile along a private road from the MEGS project site to the substation.

SURROUNDING LAND USE

As indicated above, the proposed MEGS site is located in a predominantly industrial area. Existing land uses in the vicinity of the project site include:

- North: Nulaid Foods Inc. buildings immediately north of the site;
- South: The City of Ripon waste water treatment ponds and a radio transmission tower just northwest of the treatment ponds;
- East: South Stockton Avenue borders the project site to the east. Beyond are the Fox River Paper Company buildings and to the rear of the paper company is the Ripon Cogeneration facility; and
- West: Undeveloped (currently tilled for weed control) land, with a residential subdivision located approximately one-half mile from the site.

Existing land uses along the proposed natural gas line and electrical sub-transmission line ROW include:

- Natural Gas line: Industrial uses along South Stockton Avenue.
- Electrical sub-transmission line: Industrial, light industrial, and manufacturing uses from South Stockton Avenue east along a private roadway into the Fox River Paper Company.

RECREATIONAL FACILITIES

The following neighborhood parks exist in the project's vicinity: Veterans Park and Community Center, and Oak Grove Park. Veterans Park is located approximately one-quarter of a mile northwest of MEGS on Locust Avenue and 4th Street. Oak Grove Park is located approximately one quarter of a mile south from MEGS at the end of South Stockton Avenue near the Stanislaus River. This site has been identified as a potential park site in the General Plan, but is undeveloped and not used for recreational purposes at this time.

IMPACTS

Following is the Environmental Checklist that identifies potential impacts in this issue area. Below the checklist is a discussion of each impact, and an explanation of the impact conclusion.

ENVIRONMENTAL CHECKLIST	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
LAND USE AND PLANNING -- Would the project:				
A. Physically divide an established community?				**X**
B. 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?				**X**
C. Conflict with any applicable habitat conservation plan or natural community conservation plan?				**X**

ENVIRONMENTAL CHECKLIST	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
LAND USE AND PLANNING -- Would the project:				
RECREATION				
A. Would the project 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**
B. Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?				**X**

DISCUSSION OF IMPACTS

Land Use and Planning

A. Division of an Established Community

The proposed MEGS would be located in an area within the City of Ripon designated for industrial development, and the site is currently surrounded by similar industrial uses. The facility would comply with existing zoning, and neither the size nor nature of the project would result in a physical division of an established community. No new physical barriers would be created by the project (public access across the site is not currently allowed) and no existing roadways or pathways would be blocked. Given the proposed development's consistency with on-site land use and zoning designations and its compatibility with the industrial characteristic of the project area, the proposed MEGS would not alter land use patterns. Therefore, no impacts would occur.

The proposed route for the natural gas pipeline are in existing public right-of-ways (ROWs) currently used for the public streets, or water conveyance. Construction and operation of the natural gas line would be consistent with established zoning, and would not divide or disrupt existing land uses or an established community.

The electric subtransmission line would be located within an existing private roadway which enters the Fox River Paper Company. Dedication of right-of-way would be required for the installation of approximately seven new power poles along this route. Construction and operation of the electrical transmission line would be consistent with established zoning, and would not divide or disrupt existing land uses or an established community.

The proposed natural gas line would tie into the existing gas main at South Stockton Avenue and 4th Street which will supply the proposed project site.

Construction would involve temporary disruption to land uses along the proposed ROW, which are heavy industrial uses. No aboveground structures would be built,

and operation of the pipeline would not preclude existing or planned uses in the vicinity of the pipelines.

Given the temporary nature of construction activities associated with subtransmission line poles installation and the natural gas pipeline, and the fact that these linear facilities would be placed within existing public and private ROWs, the linear facilities would not disrupt or physically divide an established community. Therefore, no impacts would occur.

B. Conflict with Land Use Plans or Policies

As described above, the proposed MEGS would be located in an area intended for industrial development based on its land use and zoning designation. Furthermore, the site is adjacent to existing similar industrial uses such as the Fox River Paper Company and Ripon Cogeneration Plant. The proposed MEGS project would represent an urban in-fill project, consistent with City of Ripon policies on economic development for the area and contiguous urban development.

In Ripon, the proposed natural gas route would occur in an existing public ROW currently used for the railroad, public roadways, or water conveyance. Installation of the natural gas pipeline is consistent with Ripon's policy on the use of public ROWs for public utility activities typically found in public ROWs. The electric subtransmission line would be located within an existing private roadway owned by the Fox River Paper Company. MID would need to obtain an easement from Fox River. The applicant will secure necessary easement rights for the placement of the electrical lines and appurtenances within the private ROW. In general, linear facilities associated with the project are permitted or conditionally permitted uses for the zoning districts within which they will exist. PG&E would enter into a franchise agreement with the City of Ripon for the proposed gas pipeline, where it will be constructed in city streets.

The objective of the proposed project is to meet the electricity demand of local MID customers. Given this objective, and the proposed project's consistency with the applicable LORS of affected jurisdictions, there would be no impact.

In a letter dated May 7, 2003, Mr. Ben Hulse, Director of the San Joaquin Community Development Department, referred to the MID Ripon project site as prime farmland as classified by the Department of Conservation (DOC). Mr. Hulse indicated that this was a significant loss of agricultural land and recommended that mitigation measures be implemented to reduce the project to a less than significant impact.

On April 29, 2003, CEC staff contacted Mr. Patrick Hennessy of the DOC Mapping & Monitoring Program to determine whether the above the referenced project site had been farmed in the last five years. It was brought to our attention by a conflict in what was provided in the SPPE document and a Phase 1 Site Assessment indicating that beans had been grown recently on the site. Mr. Hennessey provided documentation related to the proposed project site, which included site maps, and e-mail correspondence between the DOC and MID's consulting firm CH2MHill.

Based on the initial information provided by CH2MHill to the DOC, it provides supporting data that the land has in fact been fallow since 1997, which under the DOC guidelines is no longer considered Farmland of Statewide Importance or Prime Farmland; therefore no impacts would occur. This site is isolated from other farming tracts and is now in fact designated as an urban in-fill, industrially zoned parcel.

C. Conflict with Habitat or Natural Community Conservation Plans

There are no habitat conservation plans or natural community conservation plans adopted by the jurisdictions that would be affected by the proposed project. Therefore, the proposed project would not conflict with existing plans and there would be no impact.

Recreation

A. Increased Use of Recreational Facilities

Physical impacts to public services and facilities such as recreational facilities are usually associated with population inmigration and growth in an area, which increase the demand for a particular service. An increase in population in any given area may result in the need to develop new, or alter existing, government facilities in order to accommodate increased demand.

As an electric generation project seeking to meet the current demand of MID customers, the proposed project is not expected to result in an increase in the population of the area. Staff has concluded that since the regional workforce will likely be able to accommodate the MEGS construction labor needs, the project will not increase the area's population (See the Socioeconomics Section for an analysis of the construction workforce). Therefore, staff has concluded that the proposed project would not increase the use of existing recreational facilities or result in their deterioration. No impacts would occur.

B. Construction of Recreational Facilities

As a power generation project, the proposed project does not include recreational facilities or require the construction or expansion of existing recreational facilities. As described above, the proposed project would not result in an increase in the area's population that would require new or expanded recreational facilities whose construction would in turn lead to an adverse physical effect on the environment. No impacts would occur.

CUMULATIVE IMPACTS

Cumulative impacts may be caused if a project would have effects that are individually limited but cumulatively considerable when viewed together with the effects of related projects. The following projects are proposed to occur in the vicinity of the proposed project:

- City of Ripon Compressed Natural Gas Station at 240 Doak Boulevard
- City of Ripon Animal Shelter at 444 Doak Boulevard

- City of Ripon Corporation Yard expansion at 620 Doak Boulevard
- Nulaid Foods Inc. expansion at 200 Fifth Street
- Arrow Asphalt Project at 441 Doak Boulevard
- Al Waggoner Project at 1012 S. Acacia Avenue
- Expansion of Jim Aartman Trucking on Acacia Avenue
- Poppy Hills Residential Subdivision on the east side of S. Jack Tone Road across the street from the Jack Tone Golf Course
- Doak Boulevard Extension between Vera Avenue and S. Stockton Avenue
- S. Stockton Avenue Extension south to the new extension of Doak Boulevard

Immediately west of the MEGS site, Arrow Asphalt is proposing to construct four buildings with square footage ranging from 2,500 to 4,000 for each building. The Arrow Asphalt project would include an office building, a vehicle repair building, and two storage buildings (another two buildings are labeled on the Arrow Asphalt site plan as "future storage"). The maximum height of these buildings would be 22 feet. Also immediately west of the MEGS site and north of Arrow Asphalt, Al Waggoner is proposing to construct two buildings with square footage of 1,200 and 2,400 each. This project would include a two-story office building and a one-story workshop. The maximum height of these buildings would be 34 feet. It should be noted that the Arrow Asphalt and Al Waggoner projects have been recently approved by the City.

In addition to these two projects, the owners of Aartman Trucking closed escrow in May 2003 on the parcel immediately south of their existing facility on Acacia Avenue, and immediately west of the northern end of the MEGS site (MID 2003l). It is anticipated that a permit application will soon be submitted to the City for this project, which would consist of truck parking surrounded by a 6-foot high cyclone fence.

As described in this Initial Study, the proposed power plant project would not result in any significant land use impacts. In addition, the MEGS project does not appear to make a significant contribution to regional impacts related to new development and growth, such as population immigration, increased demand for public services, expansion of public infrastructure, or loss of open space. Therefore, the proposed project's contribution to land use impacts resulting from past, present, and probable future projects also is not expected to be cumulatively considerable. The proposed project has compatible land uses with the industrial and commercial projects discussed above, which are proposed in the vicinity. Similar to the proposed project, the five projects are consistent with goals of the City of Ripon General Plan, and are consistent with current land use designations and zoning. Staff concludes there are no cumulative land use impacts.

ENVIRONMENTAL JUSTICE

Staff has reviewed Census 2000 information that shows the minority population is less than 50 percent within a six-mile radius of the proposed MEGS power plant (please refer to **Socioeconomics Figure 1** in this Staff Assessment). However, as indicated in

Socioeconomics Figure 1, there are multiple census blocks with greater than 50 percent minority persons within the six-mile radius.

Based on the land use analysis, which included consideration of information supplied by participants at staff workshops, staff has not identified significant direct or cumulative impacts resulting from the construction or operation of the project, and therefore there are no land use environmental justice issues related to this project.

CONCLUSIONS

The project would not physically divide an established community, conflict with any applicable land use plan, policy, or regulation, and would not conflict with any applicable habitat conservation plan. The proposed use would be consistent with the provisions of the City of Ripon General Plan and zoning ordinance. Therefore, there are no impacts associated with Land Use and Planning Policies.

The project would not significantly increase the use of public parks or recreational facilities, nor would it necessitate the construction or expansion of recreational facilities. Therefore, there are no impacts.

PROPOSED CONDITIONS OF EXEMPTION

None proposed.

REFERENCES

California Energy Commission, Report of Conversation with Mr. Patrick Hennessy with the Department of Conservation, April 29, 2003

City of Ripon. 1998 (as amended). General Plan and EIR.

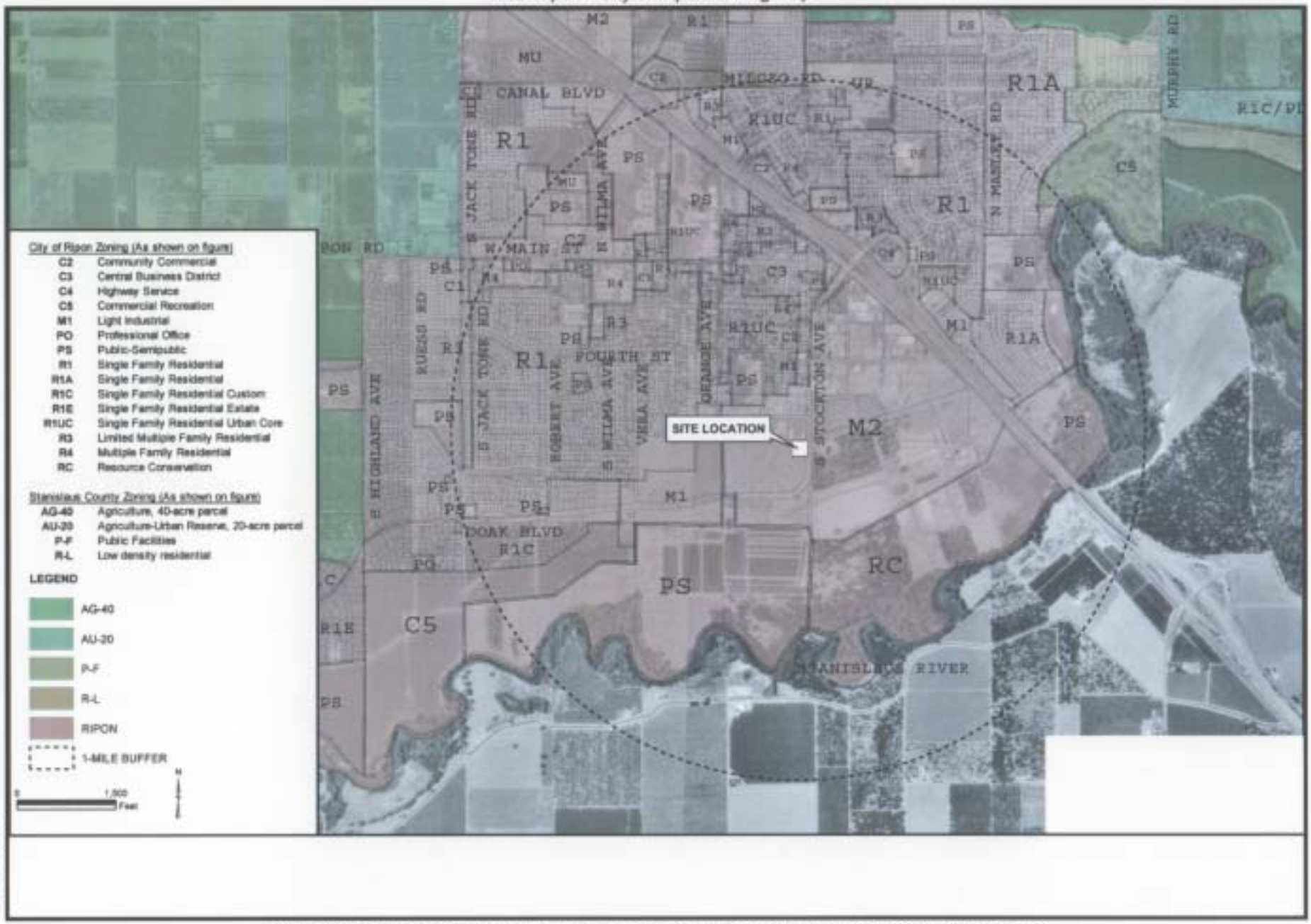
City of Ripon. 2002 (as amended). Zoning Ordinance.

MEGS (Modesto Irrigation District –Ripon). 2003a. Application for Small Power Plant Exemption, Ripon Generating Station Project (03-SPPE-1). Submitted to the California Energy Commission, April 21, 2003

San Joaquin County, Community Development Agency. Agency review of the Modesto Irrigation District Application for a Small Power Plant Exemption. May 7, 2003

LAND USE - FIGURE 1

MID Ripon - City of Ripon Zoning Map



CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, AUGUST 2003

SOURCE: AFC Figure 8.4-2

LAND USE - FIGURE 2

MID Ripon - General Plan Land Use Map

CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, AUGUST 2003

SOURCE: AFC Figure 8.4-1

NOISE AND VIBRATION

Testimony of Steve Baker

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 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 operation or construction practices, such as 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 MID Electric Generation Station (MEGS) Project, and to recommend any procedures necessary to ensure that the resulting noise and vibration impacts would be adequately mitigated to comply with applicable laws, ordinances, regulations, and standards (LORS).

LAWS, ORDINANCES, REGULATIONS AND STANDARDS

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) has 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 to which the worker is exposed (see **NOISE Appendix A**, **Table A-4**, 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.

There are no federal laws governing off-site (community) noise.

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 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 government 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 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 the federal OSHA standards.

LOCAL

San Joaquin County

The MEGS Project lies entirely within the City of Ripon. City LORS thus take precedence over San Joaquin County LORS.

City of Ripon General Plan Noise Element

The City of Ripon General Plan (Ripon 1998) addresses noise in several places. Volume I, Chapter Four, Community Health and Safety, includes Goal J, intended to "[p]rotect residents from health hazards and annoyance associated with excessive noise levels." Goal J is supported by several policies, including:

- Policy J3. To require analysis of potential noise from developments and require mitigating measures to reduce noise impacts to adopted City noise standards.
- Policy J4. To examine any source of noise projected at or above 70 dB at 50 feet for compatibility with existing or projected planned neighborhood land use before granting a rezoning or conditional use permit.
- Policy J6. The Land Use Compatibility Standards set forth in General Plan Table 4.1 are the adopted noise standards of the City of Ripon. Table 4.1, entitled "Land Use Compatibility for Community Noise Environments," shows that a Community Noise Exposure level of 50 to 60 dBA L_{dn} or CNEL is normally acceptable for Residential-Low Density Single Family, Duplex, and Mobile Homes, and a level of 55 to 70 dBA L_{dn} or CNEL is normally acceptable for Residential-Multi-Family homes.
- Policy J7. To minimize the duration of heavy equipment operations in the vicinity of residential uses or other sensitive noise receptors, especially during evening and early morning hours.

The General Plan continues with a discussion of acceptability of noise exposure (Volume II, Chapter Four, Environmental Setting, Impacts and Mitigation Measures, page 4-47), stating, "[f]or residential uses…noise levels of less than 60 dBA are presumed acceptable and are acceptable, subject to certain conditions, up to a noise level of 70 dBA….Residential lands are the predominant area in the City of Ripon which are sensitive to noise. Other sensitive land uses include schools, a rest home, a convalescent hospital, and recreation areas such as parks." On page 54, the General Plan addresses the level of significance of noise impacts, stating, "[w]here noise

standards are already exceeded, the General Plan would result in significant effects if it led to an audible increase in noise levels. Tests of human receptors have shown that a 3 decibel change in noise level is just barely perceptible."

City of Ripon Municipal Code

Section 16.20.030P of the Ripon Municipal Code (Ripon 2003) effectively prohibits construction activities at locations adjacent to residential uses outside the hours of 7:00 a.m. to 7:00 p.m. weekdays and Saturdays, and 10:00 a.m. to 6:00 p.m. on Sundays. The project site is not adjacent to residential uses; therefore, construction noise is only of concern in the City of Ripon for the natural gas pipelines that are required to support the MEGS project.

Section 16.156.120 of the Ripon Municipal Code prohibits any vibration that is discernible beyond the site boundary.

SETTING

PROJECT BACKGROUND

The MEGS Project would be a 95 MW natural gas-fired, simple cycle peaking power plant, composed of two General Electric LM6000 Sprint gas turbine generators equipped with inlet air chillers and three natural gas fuel compressors. Included in the project would be approximately 0.25 miles of electric transmission interconnection line, 0.25 miles of 8-inch diameter natural gas pipeline, potable and non-potable water lines, and stormwater and sanitary sewer lines (MID 2003a, AFE §§ 1.2, 2.3, 2.3.1, 2.4, 6.2.1.5, 6.2.2.5, 6.2.2.8, 7.1; MID 2003Z, §§ 1.0, 3.5).

EXISTING LAND USE

The MEGS would be located in a chiefly industrial area in the City of Ripon, adjacent to a wastewater treatment plant, on land zoned Heavy Industrial (MID 2003a, AFE §§ 2.2, 8.4.2.1, 8.5.3, 8.5.4.2). Sensitive noise receptors in the vicinity of the project include approximately 100 residences in a residential neighborhood to the NW, within a ½-mile radius of the project site; schools; hospitals; and two churches (MID 2003l, Data Responses 50 and 51; Bastasch 2003a, pers. comm.; Carrier 2003, pers. comm.). These residences are the sensitive receptors of greatest interest in the following analysis, as they are located nearest the project site, and would thus be exposed to the greatest noise levels.

EXISTING NOISE LEVELS

In order to predict the likely noise effects of the project on nearby sensitive receptors, the Applicant commissioned ambient noise surveys of the area. The surveys were conducted using commonly accepted techniques and equipment. The existing noise environment is composed of traffic noise from Highway 99 and local streets and roads; railroad trains on the line that parallels Highway 99; aircraft overflights; and industrial noise from a paper manufacturing operation, a grain terminal, and the wastewater treatment plant (MID 2003a, AFE §§ 8.5.3, 8.5.3.1).

Noise was monitored continuously for 25 hours at each of four locations (MID 2003a, AFE Table 8.5-5):

- Location A is a residential neighborhood W of the site, about 1,050 feet from the center of the site. (It is assumed that the project's noise will emanate from the center of the site.)
- Location B is at the eastern boundary of the project site, about 800 feet from the center of the site.
- Location C is a vacant lot over a mile NE of the site and adjacent to the railroad tracks and Highway 99.
- Location D is a residential neighborhood approximately 1.3 miles NE of the site, on the other side of Highway 99.

Refer to **NOISE: Figure 1** for the locations of these monitoring sites.

NOISE Table 2 is the applicant's summary of these ambient noise measurement results (MID 2003a, Table 8.5-6).

NOISE: Table 2
Applicant's Summary of Measured Ambient Noise Levels

Measurement Sites	Measured Noise Levels, dBA		
	Average L_{90}		L_{dn}
	Midnight—4 a.m.	10 p.m.—5 a.m.	
A	49	48	58
B	51	50	60
C	59	59	73
D	57	58	72

NOISE - FIGURE 1

MID Electric Generation Station - Noise Monitoring and Receptor Locations

CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, AUGUST 2003

SOURCE: AFC Figure 8.5-1, MID X-Megs.DXF 04/04/2003

The applicant also reported noise monitoring data for all four sites, showing the hourly L_{eq}, L_1, L_{10}, L_{50} and L_{90} values (MID 2003a, Appendix 8.5C). In general, the noise environment in the immediate vicinity of the project site is fairly loud, typical of an industrial neighborhood, with the added characteristic that noise levels are greater at night than in the daytime. This is common where the noise regime is dominated by a freeway, on which longhaul truck traffic creates more noise at night than during the day. The noise environment at Location A, representing a nearby residential neighborhood, is very similar to that at the project site, but slightly (2 dBA) quieter. Energy Commission staff summarizes these monitoring results in **NOISE: Table 3** below.

NOISE: Table 3
Staff's Summary of Measured Ambient Noise Levels

Measurement Sites	**Measured Noise Levels, dBA**				
	Daytime (10 a.m.—2 p.m.)[1]		Nighttime (10 p.m.—2 a.m.)[1]		**L_{dn}[2]**
	L_{eq}	L_{90}	L_{eq}	L_{90}	
A	45	39	50	47	**58**
B	**50**	**45**	**53**	**50**	**60**

[1] Staff estimate, employing the four quietest consecutive hours.
[2] Applicant's estimate (MID 2003a, Table 8.5-6).

IMPACTS

CALIFORNIA ENVIRONMENTAL QUALITY ACT

CEQA requires that significant environmental impacts be identified, and that such impacts be eliminated or mitigated to the extent feasible. Section XI of Appendix G of CEQA Guidelines (Cal. Code Regs., tit. 14, App. G) sets forth some characteristics that may signify a potentially significant impact. Specifically, a significant effect from noise may exist if a project would result in:

- 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;
- exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;
- a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or
- a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

The Energy Commission has interpreted the CEQA criteria such that noise produced by the permitted power-producing facility that causes an increase of more than 10 dBA in the background noise level (L_{90}) at a noise sensitive receiver during the quietest hours of the day is usually considered a significant effect. An increase of less than 5 dBA is typically considered an insignificant impact, while an increase from 5 to 10 dBA may be considered significant, depending on the specific circumstances.

Noise due to construction activities is usually considered to be insignificant in terms of CEQA compliance if:

- The construction activity is temporary,
- Use of heavy equipment and noisy activities is limited to daytime hours, and
- All feasible noise abatement measures are implemented for noise-producing equipment.

ANALYSIS OF IMPACTS

Noise impacts associated with the project can be created by construction activities, and by normal long-term operation of the power plant. Following is the Environmental Checklist that identifies potential impacts in this issue area. Below the checklist is a discussion of each impact, and an explanation of the impact conclusion.

ENVIRONMENTAL CHECKLIST	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
NOISE – Would the project result in:				
a) 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?		**X**		
b) Exposure of persons to or generation of excessive ground borne vibration noise levels?				**X**
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?		**X**		
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?		**X**		
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the area to excessive noise levels?				**X**
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the area to excessive noise levels?				**X**

DISCUSSION OF IMPACTS

A. Noise in Excess of Standards or Ordinances: Less Than Significant with Mitigation Incorporated

General Construction Noise

Construction noise is usually considered a temporary phenomenon. In this case, the construction period for the MEGS will take place between the 4th quarter 2003 and the 1st quarter 2005 (MID 2003a, AFE § 1.3). 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 is commonly exempt from enforcement by local ordinances.

The City of Ripon Municipal Code restricts construction activities to the hours of 7 a.m. to 7 p.m. Monday through Saturday, and 10 a.m. to 6 p.m. on Sunday (Ripon 2003, § 16.20.030P). The Code does not limit the loudness of construction noise. Because construction noise will be restricted to daytime hours, Energy Commission staff believes MEGS construction noise will comply with applicable LORS.

Power Plant Operation

During its operating life, the MEGS would represent essentially a steady, continuous noise source day and night (see the complete analysis under section C below). The applicant has projected plant noise levels at the nearest sensitive receptors, those residences near noise monitoring location A, approximately 1,050 feet from the centroid[1] of the project site, of 57 dBA L_{eq} or 63 dBA L_{dn} (see **NOISE: Table 4** below). The applicant has further projected plant noise levels at the next nearest sensitive receptors, those residences on South Locust Avenue, represented by location R on Figure 8.5-1 of the AFC. Location R is approximately 1,100 feet from the centroid of the site; projected plant noise level at R is 55 dBA (MID 2003a, AFC Table 8.5-8).

The applicable LORS, the City of Ripon General Plan Noise Element, sets a land use compatibility guideline of 50 to 60 dBA L_{dn} (Ripon 1998, Table 4.1). At the same time, this same noise element states that "…L_{dn} noise levels of less than 65 dBA will be considered in the acceptable range for residential land uses…." (Ripon 1998, § 4.8, p. 4-10) While the projected plant noise level of 63 dBA L_{dn} is greater than the land use guideline of 50 to 60 dBA L_{dn}, it is less than the 65 dBA L_{dn} level that is considered acceptable. Given the heavily industrialized nature of the project vicinity, and the substantial impact of freeway and railroad noise on the noise regime, Energy Commission staff believes the proposed project can be considered to comply with applicable noise LORS. To ensure that the project does, in fact, comply with this LORS, staff proposes Condition of Exemption **NOISE-1**, below.

B. Excessive Vibration: No Impact

The primary source of vibration noise associated with a power plant is the operation of the turbines. The plant's turbines must be maintained in optimal balance to minimize

[1] In modeling projected power plant noise, it is commonly assumed that noise emanates from an acoustic center, or centroid, located at the center of the noise-producing components of the facility.

excessive vibration that can cause damage or long term wear. Consequently, no discernible vibration would be experienced by adjacent land uses.

Another potential source of significant vibration is pile driving during construction. The Applicant has not stated that pile driving will be required for this project. Therefore no pile driving noise or vibration impacts are expected.

C. Permanent Increase in Ambient Noise Level: Less Than Significant with Mitigation Incorporated

Power Plant Operation

During its operating life, the MEGS would represent essentially a steady, continuous noise source day and night. Occasional brief increases in noise levels would occur during load changes, or during startup or shutdown as the plant transitions to and from steady-state operation. (Note that, for a simple cycle power plant such as MEGS, which incorporates no steam cycle, such intermittent noises would be few and relatively unobtrusive.) At other times, such as when the plant is shut down for lack of dispatch or for maintenance, noise levels would decrease.

The primary noise sources anticipated from the facility include the gas turbine generators, transformers, and fuel gas compressors. The noise emitted by power plants during normal operations is generally broadband, steady state in nature. The resulting hourly average noise levels are typically dominated by the steady-state noise sources.

The Applicant performed acoustical calculations to determine the facility noise emissions. The calculations were based on specific manufacturer noise data for the major equipment planned for the facility (MID 2003a, AFE Table 8.5-8). Specific noise mitigation measures evaluated include gas turbine generator acoustic weather enclosures (Bastasch 2003b, pers. comm.).

NOISE Table 4 lists the predicted project noise levels during plant operation in terms of the background noise level (L_{90}) and estimated L_{dn} values.

NOISE: Table 4
Summary of Predicted Operational Noise Levels

Measurement Sites	Noise Levels, dBA				L_{dn}, dB[2]
	Ambient[1]	Project[2]	Cumulative	Change	
A	47	57	57	+10	63
B	50	64	64	+14	70
R		55		<+10	

[1] Staff estimate, average background noise, monitoring location A, four quietest nighttime hours.
[2] Applicant's estimate (MID 2003a, AFE Table 8.5-8).

It is seen from these figures that the increase in noise level at noise monitoring location A due to the project would be 10 dBA. This is in the range (5 to 10 dBA) that Energy Commission staff considers potentially significant. Were the project to be located in a quiet neighborhood, this increase of 10 dBA (a doubling of noise level) could be perceived as annoying and, thus, a significant adverse impact. Were the MEGS to be

located in an exceedingly noisy locale, the addition of 10 dBA to the existing noise levels could easily be intolerable. In the case of MEGS, the noise regime in this neighborhood is only moderately loud. In such a situation, staff believes that an increase of 10 dBA will be noticeable, but not likely annoying, to residents. The projected increase in noise level at location R would likely be less than 10 dBA, and thus less likely to annoy residents.

While the applicant did not monitor the ambient noise at location R, which represents a group of residential receptors slightly farther from the project site that those a location A, the expected power plant noise at R was modeled. If the ambient noise at R is similar to that at A, then the increase due to the power plant would be 8 dBA. Even if the ambient noise at R is 2 dBA quieter than at A, the increase due to the power plant would be 10 dBA, the same as at A.

Note that the noise modeling techniques employed in project design tend to give conservative results. That is, due to assumptions regarding atmospheric noise attenuation and intervening structures and terrain, the actual power plant noise is typically less than that projected. As a result, Energy Commission staff believes that no significant noise impacts are likely to occur due to the operation of the project. To ensure that, in fact, no significant noise impacts occur, staff proposes Condition of Exemption **NOISE-1**, below. To ensure that any complaints about project noise are dealt with properly, staff proposes Condition of Exemption **NOISE-2**, below.

Linear Facilities

The project's linear facilities would all be effectively silent in operation. No significant noise impacts are likely.

Worker Effects

The Applicant recognizes the need to protect plant operating and maintenance personnel from noise hazards, and has committed to comply with applicable LORS (MID 2003a, AFE § 8.5.2.1; Table 8.5-4). 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. The Applicant would implement a comprehensive hearing conservation program.

D. Substantial Temporary Increase in Noise Level: Less Than Significant with Mitigation Incorporated

General Construction Noise

Applicable LORS (Ripon 2003, § 16.24.020 P) do not limit the loudness of construction noise, but staff compares the projected noise levels to the ambient. In this case, since construction is restricted to daytime, it is compared to daytime ambient levels. Because construction noise varies with time, staff compares it with the ambient L_{eq} level.

The Applicant has prepared an analysis of construction noise impacts, listing predicted noise levels due to specific types of equipment and of generalized construction activities (MID 2003a, AFE Table 8.5-13). The predicted plant construction noise levels at

residential receptor location A, the nearest sensitive receptor, vary from 46 to 57 dBA. (It should be noted that this is a conservative estimate, as the prediction does not account for shielding by intervening buildings. Actual noise levels should be lower.)

Compared to the daytime L_{eq} levels during the four quietest consecutive hours (see **NOISE: Table 3** above), the predicted plant construction noise levels would result in cumulative noise levels up to 57 dBA, about 12 dBA higher than under the ambient conditions, at the nearest residence. However, this resulting cumulative noise level is within normally acceptable limits for short-term noise exposures. Because construction noise is temporary in nature, and because construction noise will be restricted to daytime hours, the noise effect of plant construction is considered to be insignificant.

Linear Facilities

Construction of the linear facilities will produce noise, due to the operation of heavy powered equipment. The Applicant has provided a listing of typical construction equipment, and the expected noise levels at a reference distance of 50 feet. The use of powered equipment in proximity to residences will cause increases in ambient noise levels. However, because the increase in noise levels is of a temporary nature, and because construction noise will be restricted to daytime hours, the noise effect of linear facilities construction is considered to be insignificant.

Tonal and Intermittent Noises

One possible source of annoyance would be strong tonal noises. Tonal noises are individual sounds (such as pure tones) that, while not louder than permissible levels, stand out in sound quality. The Applicant has indicated that project design will ensure that no strong tonal noises will be generated during the operation of the project (MID 2003a, AFE § 8.5.4.2).

Worker Effects

The Applicant acknowledges the need to protect construction workers from noise hazards. The Applicant recognizes the applicable LORS that would protect construction workers, and commits in general to complying with them (MID 2001a, § 8.5.2.1; Table 8.5-4).

E. Airport Noise Impacts: No Impact

The project is not within an airport zone. Therefore there are no impacts related to noise near an airport.

F. Private Airstrip Impacts: No Impact

The project is not near a private airstrip, therefore there would be no impacts related to private airstrips.

CUMULATIVE IMPACTS

Cumulative impacts may be caused if a project would have effects that are individually limited but cumulatively considerable when viewed together with the effects of related projects. Only five projects are proposed to occur in the vicinity of the proposed project:

- The NuLaid Foods, Inc. Expansion Project (directly north of and adjacent to the proposed site) is proposed to include the expansion of their current facilities with additional buildings. The project is currently under review by the City of Ripon and no approvals have been given or start date determined at this time.
- The City of Ripon Compressed Natural Gas (CNG) station at 240 Doak Blvd has been approved by the City of Ripon. Completion is expected within 24 months from start of construction.
- The Aartman Milk Transport Company located at 805 S. Locust Avenue is under review by the City of Ripon. The proposed expansion of their facilities has not been approved and a start date for construction is unknown at this time.
- The Lombardy Estates Industrial Park, located on Doak Blvd between South Stockton Avenue and South Acacia Avenue, was approved by the City of Ripon Planning Department in December of 2002. The industrial park will consist of eight industrial parcels. Completion is expected in April 2004.
- The Arrow Asphalt Company, located 441 Doak Road, is under review by the City of Ripon Planning Department. The proposal is to construct a 2,425 square foot office building, a 4,000 square foot vehicle repair building, a 4,000 square foot storage building and a 3,600 square foot storage building.

Cumulative noise impacts could occur if one or more of these projects were constructed concurrently with the MEGS, and if one or more of these projects were sufficiently near the MEGS (within ¼ mile or so) that the noise from their construction or operation combined to impact nearby sensitive receptors. While several of the projects listed above would be located in the vicinity of the MEGS, staff believes they will be sufficiently separated that combined noise will not create significant impacts on the residences to the NW. Further, construction noise from multiple projects, being intermittent in nature, is unlikely to combine to produce significant impacts.

RESPONSE TO COMMENTS FROM THE PUBLIC

Pam Kaefer:

Mrs. Kaefer is concerned that the project site is very near her residence (1/10 mile), represented by the applicant's noise monitoring location R. While the nearest boundary of the site may be that close to her property, the noise centroid of the project (that spot from which the project's noise appears to emanate) is farther. From the aerial photograph (AFC, Figure 8.5-1), Energy Commission staff believe the project noise centroid is approximately 1,100 feet from noise modeling location R. This puts it slightly farther from her residence than from those residences at noise monitoring location A, at 1,050 feet.

Daniel J. Lehman

The applicant did not monitor the ambient noise at location R, but subsequently modeled projected power plant noise at that location, which represents the second nearest cluster of sensitive receptors (residences). Absent specific ambient noise monitoring at R, staff have assumed the noise regime at R to be similar to that at

monitoring location A. In response to this concern, and to verify staff's assumption, Energy Commission staff have commissioned an ambient noise survey at location R, to take place the week of August 25, 2003.

Robert Sarvey

Mr. Sarvey claims there are sensitive receptors nearer to the project than noise monitoring location A, at 1,800 feet. In fact, location A, only 1,050 feet from the centroid of the plant site, represents the nearest residential (i.e., sensitive) receptors, and thus the receptors likely to receive the greatest noise impact.

Mr. Sarvey points to Appendix A to the testimony, which quotes Karl Kryter. In general, Mr. Kryter's claim that a 10 dBA increase "…almost always caused an adverse community response…" is true. However, in staff's experience, the many conservatisms inherent in designing noise mitigation for power plants invariably yields a plant quieter than intended. Therefore, staff has long employed the policy stated in the testimony, in the last paragraph on page 11-5: "…[N]oise…that causes an increase of more than 10 dBA,,,is usually considered a significant effect…while an increase from 5 to 10 dBA may be considered significant…." Therefore, staff uses an increase of 10 dBA as the upper bound of an acceptable impact, rather than the lower bound of an unacceptable impact.

Dana McManus

Ms. McManus operates a business near the project site. Noise from the plant will comply with City of Ripon LORS, as explained in the testimony. As businesses are commonly not regarded as sensitive noise receptors, this represents adequate protection from excess noise.

CONCLUSIONS AND RECOMMENDATIONS

Energy Commission staff concludes that the MEGS project will be built and operated to comply with all applicable noise laws, ordinances, regulations, and standards. Energy Commission staff further concludes that if the MEGS facility were designed as described above, it is not expected to produce significant adverse noise impacts. To ensure that such is the case, staff proposes two Conditions of Exemption, below.

PROPOSED CONDITION OF EXEMPTION

NOISE-1 The project design and implementation shall include appropriate noise mitigation measures adequate to ensure that noise due to operation of the project will not exceed 57 dBA when measured at residential receivers at noise monitoring location A or 55 dBA when measured at residential receivers at noise monitoring location R, and that the noise due to plant operations will comply with the noise standards of the City of Ripon Noise Element.

No single piece of equipment shall be allowed to stand out as a source of noise that draws legitimate complaints. The production of pure tones during normal plant operation is not allowed.

Within 30 days of the project first achieving a sustained output of 80 percent or greater of rated capacity, the project owner shall conduct a 25-hour community noise survey at monitoring locations A and R. The survey during power plant operations shall also include measurement of one-third octave band sound pressure levels to ensure that no new pure-tone noise components have been introduced.

If the results from the noise survey indicate that the noise produced by the project exceeds 57 dBA at location A or 55 dBA at location R for any given 4-hour period during the 25-hour period, or that the noise standards of the City of Ripon Noise Element have been exceeded, mitigation measures shall be implemented to reduce noise to a level of compliance with these limits. If any pure tones are present, mitigation measures shall be implemented to eliminate the pure tones.

Verification: Within 15 days after completing the survey, the project owner shall submit a summary report of the survey to the City of Ripon Planning Department, and to the CPM. Included in the 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. Within 15 days of completion of installation of these measures, the project owner shall submit to the CPM a summary report of a new noise survey, performed as described above and showing compliance with this condition.

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 functionally equivalent procedure acceptable to the City of Ripon, 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 related to the complaint;
- If the noise is project related, take all feasible measures to reduce the noise at its source; and
- Submit a report documenting the complaint and the actions taken. The report shall include: a complaint summary, including final results of noise reduction efforts; and if obtainable, a signed statement by the complainant stating that the noise problem is resolved to the complainant's satisfaction.

Verification: Within five days of receiving a noise complaint, the project owner shall file a copy of the Noise Complaint Resolution Form, with the City of Ripon, documenting the resolution of the complaint. If mitigation is required to resolve a 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 implemented.

EXHIBIT 1 - NOISE COMPLAINT RESOLUTION FORM

Modesto Irrigation District Electric Generation Station, Ripon
(03-SPPE-1)

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).

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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.
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.

Except under special conditions, a change in sound level of one dB cannot be perceived.
Outside of the laboratory, a three dB change is considered a barely noticeable difference.
A change in level of at least five dB is required before any noticeable change in community response would be expected.
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 ten 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. § 1910.95

PUBLIC HEALTH

Testimony of Ramesh Sundareswaran

INTRODUCTION

The purpose of staff's public health analysis is to determine if toxic air contaminants from the proposed MID Electric Generation Station (MEGS) project will have the potential to cause significant adverse public health impacts. If potentially significant health impacts are identified, staff will evaluate mitigation measures to reduce such impacts to insignificant levels. The section is organized to include a description of the method for analyzing potential health impacts and the criteria used to determine their significance, a summary of the MEGS project along with discussions regarding selected checklist items with respect to the topical areas of concern. It concludes with staff's recommended conditions of exemption to monitor and mitigate the project, as needed.

METHOD OF ANALYSIS

Staff is concerned about toxic air contaminants 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 air quality standards have been set 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 process known as health risk assessment is used to determine if people might be exposed to those types of pollutants at unhealthy levels. The risk assessment procedure consists of the following steps:

1. Identify the types and amounts of hazardous substances that the MEGS project could emit to the environment.
2. Estimate worst-case concentrations of project emissions in the environment using dispersion modeling.
3. Estimate amounts of pollutants to which people could be exposed through inhalation, ingestion, and dermal contact.
4. Characterize potential health risks by comparing worst-case exposure to safe standards based on known health effects.

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, which are estimated by the screening level assessment. This is accomplished by examining conditions that would lead to the highest, or worst-case risks, and then using those 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 calculated to be the highest;
- using health-based standards designed to protect the most sensitive members of the population (i.e., the young, elderly, and those with respiratory illnesses); and
- assuming that an individual's exposure to cancer-causing agents occurs for 70 years.

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 which could present a health hazard from non-inhalation pathways of exposure (see California Air Pollution Control Officers Association (CAPCOA) 1993, Table III-5). 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 (CAPCOA 1993, p. III-19).

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 (1-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 which arise as a result of long term exposure to lower concentrations of pollutants. The exposure period is considered to be approximately from ten to one hundred percent of a lifetime (from seven to seventy years). 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 (CAPCOA 1993, p. III-36). 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 RELs 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 conformance with CAPCOA guidelines, the health risk assessment assumes that the effects of each substance are additive for a given organ system (CAPCOA 1993, p. III-37). In those cases where the actions may be synergistic (where the effects are greater than the sum), this approach may underestimate the health impact (Id).

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. In reality, the risk is generally too small to actually be measured. For example, the ten in one million significant risk level represents a ten in one million increase in the normal risk of developing cancer over a lifetime, at whatever location is estimated to have the worst-case risk.

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 the California Office of Environmental Health Hazard Assessment), 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 are likely to be lower or even 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

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. 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 one signifies that the worst-case exposure is below the safe level. The hazard index for every toxic substance which 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 one indicates that cumulative worst-case exposures are less than the reference exposure levels (safe levels). Under these conditions, health protection 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, § 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 ten in one million, or 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 which applies to Proposition 65.

The significant risk level of ten in one million is consistent with the level of significance adopted by the SJVAPCD pursuant to Health and Safety Code § 44362(b), which requires notification of nearby residents when an air district determines that there is a significant health risk from a facility. The recommended threshold of significant impact for emitted hazardous air pollutants is 10 in one million. In general, SJVAPCD would not approve a project with a cancer risk exceeding ten in one million.

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. 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? If facility risk, based on refined assumptions, exceeds the significance level of ten in one million, staff would require appropriate measures to reduce risk to less than significant. If, after all risk reduction measures had been considered, a refined analysis identifies a cancer risk greater than ten in one million, staff would deem such risk to be significant, and would not recommend project approval.

SETTING

This section describes the environment in the vicinity of the MEGS project from the public health perspective. Features 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, affects public exposure to project emissions. Additional factors affecting potential public health impact include existing air quality and environmental site contamination.

SITE AND VICINITY DESCRIPTION

The proposed site will comprise approximately eight acres of a twelve-acre parcel in an industrial area in the city of Ripon, California. It is located at the intersection of Doak Boulevard and South Stockton Avenue.The site topography is relatively flat, with an average elevation of 62 feet above mean sea level (MID 2003a).

Currently, land at the proposed site is classified as industrial land. The surrounding land is also generally industrial.

As mentioned above, the location of sensitive receptors near the proposed site is an important factor in considering potential public health impacts. There are no public health sensitive receptors such as residences, schools, medical facilities, and places of worship within one-fourth mile of the site. Small Power Plant Exemption (SPPE) Figure 8.6-1 shows sensitive receptors within a 3-mile radius of the project site.

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 dominated by the influence of mountains on three sides and the Pacific high-pressure system, which is a semi-permanent, subtropical high-pressure system located off the coast. The size and strength of the Pacific high is at a maximum during the summer, when it is at its northernmost position, and results in strong northwesterly air flow and negligible precipitation. During this period, inversions become strong, winds are light, and the pollution potential is high. The Pacific high's influence weakens during the fall and winter when it moves southwestward, which allows storms from the Gulf of Alaska to reach northern California. About 80 percent of the region's annual rainfall occurs between November and March. During the winter, inversions are weak, winds often moderate, and the potential for air pollution is low.

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 Joaquin Valley Air Pollution Control District (SJVAPCD), which includes all or portions of San Joaquin, Stanislaus,

Merced, Madera, Fresno, Kings, Tulare and Kern counties. The California Air Resources Board conducts toxic air contaminant monitoring in San Joaquin Valley.

By combining average toxic concentration levels 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.

The toxic air monitoring station closest to the MEGS project is on Fourteenth Street in Modesto. Based on levels of toxic air contaminants measured at this station in 1999, the background cancer risk for this location is 163 in one million (CARB 2001). For comparison purposes, it should be noted that the overall lifetime cancer risk for the average individual in the USA is about 1 in 4, or 250,000 in a million.

SITE CONTAMINATION

Site disturbances will 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.

A Phase II Environmental Site Assessment (ESA) was conducted to define the extent of suspected pesticide contamination at the site (DTSC 2003a & b, MID 2003q). No pesticides were identified above target risk levels that constitute an actual or potential endangerment to health. No additional sampling or remediation is therefore warranted at the site. Please see the Waste Management section of this Initial Study for details.

ENVIRONMENTAL CHECKLIST	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
AIR QUALITY – Would the project cause the surrounding population to be exposed to airborne diseases and/or toxic air contaminants at levels hazardous to health during:				
Construction			X	
Operations		X		

ANALYSIS AND DISCUSSION OF IMPACTS

The proposed MEGS project would be considered to have significant impacts related to public health if it would:

- cause the surrounding population to be exposed to airborne diseases and/or toxic air contaminants at levels that cause hazardous health effects.

The basis for the outcome provided in the checklist is discussed below.

Construction

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 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.

As described above and in the Waste Management section, a Phase II ESA is currently under way to delineate the extent of potential onsite contamination.

The operation of construction equipment will result in air emissions from diesel-fueled engines. 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. EPA as hazardous air pollutants and by the Air Resources Board (ARB) as toxic air contaminants.

Exposure to diesel exhaust causes both short- and long-term adverse health effects. Short-term effects can include increased cough, 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 (SRP) recommended a chronic REL (see REL discussion in Method of Analysis section above) for diesel exhaust particulate matter of 5 $\mu g/m^3$ and a cancer unit risk factor of 3x10-4 $(\mu g/m^3)^{-1}$ (SRP 1998, p. 6). The SRP did not recommend a value for an acute REL, since available data in support of a value was deemed insufficient. On August 27, 1998, the ARB listed particulate emissions from diesel-fueled engines as a toxic air contaminant and approved SRP's recommendations regarding health effect levels.

Construction of the MEGS project is anticipated to take place over a period of ten months. As noted earlier, assessment of chronic (long-term) health effects assumes continuous exposure to toxic substances over a significantly longer time period, typically from seven to seventy years.

SPPE Application Table 8.1F-2 and Appendix 8.1F present exhaust emissions from construction activities. Diesel emissions are generated from sources such as trucks, graders, cranes, welding machines, electric generators, air compressors, and water pumps. The maximum carcinogenic risk due to exposure to diesel emissions during construction activities is estimated to be approximately 4.8 in one million, which is below the 10 in one million level considered to be significant by staff and under the SJVAPCD guidelines.

In order to mitigate potential impacts from particulate emissions during the operation of diesel-powered construction equipment, **Air Quality** staff recommends the use of ultra low sulfur diesel fuel and the use of 1996 U.S. EPA certified diesel engines. As mentioned earlier, there are no sensitive receptors within one-fourth mile of the site. The impacts from diesel construction equipment typically occur within a very short distance of its operation, often within the fenceline of a project.

Operation

Emissions Sources

The emissions sources at the proposed MEGS project include two simple cycle gas turbines, cooling tower, and possibly a spray dryer, depending on the type of zero liquid discharge system selected during the final design stage. During operation, potential public health risks are related to natural gas combustion emissions from the gas turbines and trace contaminants present in the raw, non –potable water being emitted through the cooling tower and spray dryer.

As noted earlier, the first step in a health risk assessment is to identify potentially toxic compounds that may be emitted from the facility.

Table 8.6-3 of the SPPE lists noncriteria pollutants that may be emitted from MEGS's project. Table 8.6-4 of the SPPE 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 CAPCOA Guidelines (CAPCOA 1993). **Public Health Table 1** lists toxic emissions and itemizes the potential health impacts of each. For example, the first row shows that oral exposure to acetaldehyde is not of concern, but if inhaled, may have cancer and chronic (long-term) noncancer health effects, but not acute (short-term) effects.

Emissions Levels

Once potential emissions are identified, the first 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.

PUBLIC HEALTH Table 1
Types of Health Impacts and Exposure Routes Attributed to Combustion-Related Toxic Emissions

Substance	Oral Cancer	Oral Noncancer	Inhalation Cancer	Noncancer (Chronic)	Noncancer (Acute)
Acetaldehyde			✓	✓	
Acrolein				✓	✓
Ammonia				✓	✓
Benzene			✓	✓	
1,3-Butadiene			✓		
Ethylbenzene				✓	
Hexane				✓	
Formaldehyde			✓	✓	✓
Napthalene		✓		✓	
PAHs	✓		✓		
Propylene				✓	
Propylene oxide			✓	✓	✓
Toluene				✓	
Xylene				✓	✓
Diesel Particulate			✓	✓	

Source: SPPE Table 8.6-4 using reference exposure levels and cancer unit risks from CAPCOA Air Toxics "Hot Spots" Program Revised 1992 Risk Assessment Guidelines, October 1993

The next step in the health risk assessment process is to estimate the ambient concentrations of toxic substances. For the MEGS facility, air dispersion modeling was used to estimate the ambient concentrations of facility toxic emissions. Finally, the ambient concentrations were used in conjunction with RELs and cancer unit risk factors to estimate health effects, which 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 the California Air Pollution Control Officers Association (CAPCOA) Air Toxics "Hot Spot" Program Revised 1992 Risk Assessment Guidelines (October 1993) referred to earlier, and results in the following health risk estimates.

Impacts

The screening health risk assessment for the project, including combustion and noncombustion emissions, resulted in a maximum acute hazard index of 0.02. The chronic hazard index at the point of maximum impact is 0.002. As **Public Health Table 2** shows, both acute and chronic hazard indices are under the reference exposure level of 1.0, indicating that no short- or long-term adverse health effects are expected.

Total worst-case individual cancer risk from facility operation as shown in **Public Health Table 2** is estimated to be 0.22 in one million. As discussed earlier, this is the risk at the location where long-term pollutant concentrations are calculated to be the highest.

PUBLIC HEALTH Table 2
Operation Hazard/Risk

Type of Hazard/Risk	Hazard Index/Risk	Significance Level	Significant?
Acute Noncancer	0.02	1.0	No
Chronic Noncancer	0.002	1.0	No
Individual Cancer	0.22×10^{-6}	10×10^{-6}	No

Source: MID2003a, Table 8.1-29

Cooling Tower

In addition to toxic air contaminants, the possibility exists for bacterial growth to occur in the cooling tower, including Legionella. Legionella is a type of bacteria that grows in water (optimal temperature of 37∀C) and causes Legionellosis, otherwise known as Legionnaires' disease. Untreated or inadequately treated cooling systems in the United States have been correlated with outbreaks of Legionellosis. These outbreaks are usually associated with building heating, ventilating, and air conditioning (HVAC) systems but it is possible for growth to occur in industrial cooling towers. In fact, Legionella bacteria have been found in drift droplets. The U.S. Environmental Protection Agency (U.S. EPA) published an extensive review of Legionella in a human health criteria document (EPA 1999). The U.S. EPA noted that Legionella survival is enhanced by symbiotic relationships with other microorganisms, particularly in biofilms (layers of bacteria that are typically loosely attached to a surface) and that aerosol-generating systems such as cooling towers can aid in the transmission of Legionella from water to air. Numerous outbreaks of Legionellosis have been linked to cooling towers and evaporative condensers in hospitals, hotels, and public buildings, clearly establishing these water sources as habitats for Legionella. Kool et al (2000) found that Legionella was detected in water systems of 11 of 12 hospitals in San Antonio, Texas. Interestingly, the number of legionnaires' disease cases in each hospital correlated better with the proportion of water-system sites that tested positive for Legionella ($p=0.07$) than with the concentration of Legionella bacteria in water systems ($p=0.23$).). According to the EPA, in most cases, disease outbreaks resulting from Legionella aerosolizations have involved indoor exposure or outdoor exposure within 200 meters (approximately 650 feet) of the source. 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. The U.S. EPA also published a Legionella Drinking Water Health Advisory (EPA 2001) noting that there are several control methods for disinfecting water in cooling systems, including thermal (super heat and flush), hyperchlorination, copper-silver ionization, ultraviolet light sterilization, ozonation, and instantaneous steam heating systems.

One technical paper (Addiss, David, et al. 1989) describes cases of Legionnaires' Disease due to cooling tower drift in a town in Wisconsin in the summer of 1986. The authors noted that of five cooling towers in the area, the tower associated with the

Legionnaires' disease was the only one that did not use chemical biocides. Furthermore, the cooling tower was "old" (built before 1986) and the water temperature was 41∀C, which is in the middle of the "active growth" range of 25-55∀C for Legionella. There were no problems caused by the other four cooling towers, which treated their cooling water. Another technical paper (Bhopal, R.S., et al. 1991) addressed the relative risk of contacting Legionnaires' Disease when living in the proximity of cooling towers. The relative risk of 3.0 within 0.5 Km (approximately 1650 feet) of the cooling tower drops to a risk of 1.19 at distances of 0.5-0.75 Km (approximately 1650-2500 feet) of the cooling tower. Placed into context of the proposed MEGS project, the distance to the nearest residential receptor is more than 5200 feet. In conclusion, these two articles provide evidence that older cooling towers with untreated water can be a source of Legionella, but that if chemical biocides are used or residences are located further than approximately 2500 feet away, the risks of contracting Legionnaires' disease would be very low.

A paper presented at the 1978 annual meeting of the Cooling Technology Institute (CTI) notes that aerosol particles or droplets larger than 600 micrometers would be expected to fall to the surface within a few hundred meters of the cooling tower (Adams, Paul A. and Lewis, Barbara 1978). Drift eliminators would remove these larger aerosol particles down to a size of about 100 - 200 micrometers. These small particles may be expected to travel long distances downwind in the diffusing cooling tower plume. Bacterial aerosol concentrations in the vicinity of and downwind of cooling towers are affected by: quality of makeup water, type of biofouling control, effect of biological oxygen demand (BOD) in makeup water, wind speed, height of tower, speed and efficiency of the vent fans, stability of the atmosphere and temperature differential between exit and ambient air. The potential public health hazard from microbial aerosols within a cooling tower plume is difficult to estimate.

Another paper presented at the 1982 CTI annual meeting (Tyndall R.L. 1982) discussed the profiles and infectivity of Legionella bacteria populations in cooling towers. A survey of both industrial and air conditioning cooling towers was conducted for the presence of this bacterium which showed that while the majority of cooling water tested contained more than 10,000 bacteria per liter of water, chlorine can be effective in controlling Legionella concentrations in some cooling towers. The authors concluded that generalizations concerning the content and serotypic profiles of Legionella in cooling towers at any given site cannot be made and that each cooling tower needs to be individually assessed. It also appears that some biocides routinely used to control bacteria in cooling tower waters are not always effective against Legionella.

In 2000, the CTI issued its own report and guidelines for the best practices for control of Legionella (CTI 2000). The CTI found that 40-60 percent of industrial cooling towers tested was found to contain Legionella. It estimated that more than 4,000 deaths per year are believed to occur from Legionellosis (from all sources, not limited to industrial cooling towers), but only about 1,000 are reported. The CTI listed no reference or supportive data for this assertion, however. It also noted that continuous chlorine- or bromine-based biocide free residuals of 0.5 to 1.0 ppm in the cooling tower hot return water have been recommended by many agencies and that biodispersants and biodetergents may aid in the penetration, removal, and dispersion of the which often

builds up on the inside of pipes. Furthermore, the use of these dispersants and detergents often increases the efficacy of the biocide.

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 high-efficiency mist eliminators on cooling towers, and the overall general control of microbiological populations.

Nalepa, et al (2002) researched the effectiveness of bromine-based biocides on microbial biofilms and biofilm-associated Legionella Pneumophila. Biofilms in cooling systems contribute to a reduction in heat transfer, increase in energy consumption, increase in corrosion, and an increase in health risk. The authors noted that world-wide, deadly outbreaks of Legionnaires' disease continue to take place with regularity despite a growing list of published guidelines and recommended practices by CTI and other industry groups and governmental agencies. The results of studies indicate that the bromine-based biocides may be more effective than chlorine-based biocides against aged, more difficult to kill biofilms. However, the authors concluded that when properly applied, oxidizing biocides could be part of an overall water treatment program that incorporates effective microbiological control, scale, and corrosion inhibition strategies together with regular maintenance practices.

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.

In summary, the scientific and technical trade literature are replete with examples of Legionella bacterium present in industrial cooling towers, other building HVAC systems, and indeed, surface waters throughout the world. Health experts have not found a concentration of this bacterium which would not present some risk of infection to the public, that is, a concentration in water below which would be deemed totally "safe". Evidence supports the fact that despite water temperature and biocide control, a thin "bio-film" can form on the inside walls of piping and serve to protect the bacteria from the biocide and temperature variations. Additional chemical additives, mechanical removal, and/or "back-flushing" of the system can be used to remove this bio-film. Despite these facts, it is clear than outbreaks of Legionnaire's disease caused by Legionella bacteria are rare and are due most likely to sources other than modern industrial cooling towers that utilized biocides and that if biofilm formation is under control, Legionella will be restricted to negligible levels.

The following management strategies are directed at minimizing colonization, amplification within the equipment, or both (ASHRAE 1998 and 2000):

- Avoid piping that is capped and has no flow (dead legs).

- Control input water temperature to avoid temperature ranges where Legionella grow. Keep cold water below 25∀C (77∀F) and hot water above 55∀C (131∀F).
- Apply biocides in accordance with label dosages to control growth of other bacteria, algae, and protozoa that may contribute to nutritional needs of Legionella. Rotating biocides and using different control methods is recommended. These include thermal shock, oxidizing biocides, chlorine-based oxidants and ozone treatment.
- Conduct routine periodic “back-flushes” to remove bio-film buildup on the inside walls of the pipes.

The Applicant has proposed the use of sodium bromide as a cooling tower biocide. It’s efficacy, however, 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. Staff has therefore proposed Condition of Exemption **Public Health-1** that would require the project owner to prepare and implement a biocide and anti-biological growth agent-monitoring program. The program would 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 bacteria removal, the chances of Legionella growing and dispersing would be reduced to insignificancant.

CUMULATIVE IMPACTS

The maximum impact location occurs where pollutant concentrations from MEGS project would theoretically be the highest. Even at this location, staff does not expect any significant change in lifetime risk to any person, and the increase of 0.22 in a million does not represent any real contribution to the average lifetime cancer risk of 250,000 in a million. Modeled facility-related risks are lower at all other locations, and actual risks are expected to be much lower, since worst-case estimates are based on conservative assumptions, and overstate the true magnitude of the risk expected. Therefore, staff does not consider the incremental impact of the additional risk posed by the MEGS project to be either significant or cumulatively considerable.

The worst-case chronic noncancer health impact from the MEGS project (0.002 hazard index) is well below the significance level of 1.0 at the location of maximum impact. Similarly, the worst-case acute health impact of 0.02 is below the significance level of 1.0. At these levels, staff does not expect any cumulative health impacts to be significant. As with cancer risk, long-term hazard would be lower at all other locations and cumulative impacts at other locations would also be less than significant (MID 2003s).

Even in the unlikely event that worst-case emissions from an existing facility were to coincide both geographically and temporally with MEGS emissions at the location of maximum impact, the overall long-term health outlook would not change for anyone. Thus, the MEGS project will not result in any significant cumulative cancer or chronic noncancer health impacts.

ENVIRONMENTAL JUSTICE

Staff has reviewed Census 2000 information that shows the minority population is less than 50 percent within a six-mile radius of the proposed MEGS project (please refer to **Socioeconomics Figure 1** in this Initial Study). However, as indicated in Socioeconomics Figure 1, there are multiple census blocks with greater than 50 percent minority persons within the six-mile radius are. Staff considers these to be pockets or clusters. Staff also reviewed Census 2000 information that shows the low-income population is less than fifty percent within the same radius.

Based on the **Public Health** analysis, which included consideration of information supplied by participants at staff workshops, staff has not identified significant direct or cumulative impacts resulting from the construction or operation of the project and, therefore, there are no public health environmental justice issues related to this project.

CONCLUSIONS

Staff has analyzed potential public health risks associated with construction and operation of the MEGS project. Staff does not expect there to be any significant adverse cancer, or short- or long-term noncancer health effects from project emissions.

Implementation of staff's proposed Condition of Exemption would also ensure that the risk of Legionella growth and dispersion is reduced to less than significant.

PROPOSED CONDITION OF EXEMPTION

Public Health-1: The project owner shall develop and implement a cooling tower Biocide Use, Biofilm Prevention, and Legionella Control Program to ensure that cooling tower bacterial growth is controlled. The Program shall be consistent with CEC's guidelines or the Cooling Tower Institute's guidelines for control of Legionella.

Verification: At least 30 days prior to the commencement of cooling tower operations, the Biocide Use, Biofilm Prevention, and Legionella Control Program to the CPM for review and approval.

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SOCIOECONOMICS

Testimony of Amanda Stennick

INTRODUCTION

California Energy Commission (Energy Commission) staff socioeconomic impact analysis evaluates the project induced changes on community services and/or infrastructure and related community issues such as Environmental Justice (EJ) and facility closure. Direct, indirect, induced, and cumulative impacts are also included. Staff discusses the estimated impacts of the construction and operation of the Modesto Irrigation District (MID) Electric Generation Station (MEGS) project on local communities, community resources, and public services, pursuant to Title 14, California Code of Regulations, Section 15131. The MEGS project power plant, will be owned, and operated by MID, a public agency.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

CALIFORNIA GOVERNMENT CODE, SECTIONS 65996-65997

As amended by SB 50 (Stats. 1998, ch. 407, sec.23), these sections state that public agencies may not impose fees, charges, or other financial requirements to offset the cost for school facilities.

SETTING

DEMOGRAPHIC CHARACTERISTICS

The project site is located in the City of Ripon in San Joaquin County. The City of Ripon is within a mile of Stanislaus County, so the study area will consist of the City of Ripon, and San Joaquin and Stanislaus Counties.

Adjacent to the nine-county Bay Area, San Joaquin and Stanislaus Counties have been receiving spillover growth from the Bay Area's economic growth, with people moving to the counties and commuting to jobs in Alameda, Contra Costa, and Santa Clara Counties. As a result, San Joaquin and Stanislaus Counties are two of the fastest growing counties in California. The San Joaquin Council of Governments (SJCOG) expects the two-county population to increase by more than 58 percent over the 20 years from 2000 to 2020, for an average annual compounded growth rate of 2.32 percent. The City of Ripon, with a projected January 1, 2002 population of 11,155, is one of the smallest cities in San Joaquin County, but is expected to continue its population growth trend of the 1990s to surpass the growth rates of the State and the two-county region. **SOCIOECONOMICS Table 1** shows the historical and projected populations for the study area and the state.

SOCIOECONOMICS Table 1
Historical and Projected Populations

Area	1990 Population	2000 Population	2010 Population	2015 Population
San Joaquin County	480,628	563,598	727,800	803,400
Stanislaus County	370,522	446,997	587,600	646,800
City of Ripon	7,455	10,134	15,700	18,300
Two-County Total	851,150	1,010,595	1,315,400	1,450,200
California	29,760,021	33,871,648	40,262,400	42,711,200

Source: Department of Finance (DOF), and US Census, 1990 & 2000

SOCIOECONOMICS Table 2 shows the minority and low-income populations within the six-mile radius of the proposed project, the City of Ripon, San Joaquin and Stanislaus Counties, and the State.

SOCIOECONOMICS Table 2

Area	% Minority	% Persons below poverty level
Six-mile radius	34.58	10.08
City of Ripon	22.70	6.20
San Joaquin County	52.60	17.70
Stanislaus County	42.7	16.0
California	53.30	14.20

Source: US Census 2000

The minority population within six-miles of the site is 34.58 percent, which is somewhat higher than the 22.70 percent minority population of the City of Ripon and significantly lower than that of the state. The population below the poverty level was 10.08 percent within six miles of the site, which is higher than the 6.20 percent for the City of Ripon and somewhat less than that of the state.

EMPLOYMENT AND ECONOMY

SOCIOECONOMICS Table 3 shows employment data for the study area and the state. Data from the Employment Development Department (EDD) show that the unemployment rate for the City of Ripon is lower than the unemployment rates for San Joaquin and Stanislaus Counties, but is slightly higher than the unemployment rate for the state.

SOCIOECONOMICS Table 3: Employment Data 2001

Area	Labor Force	Employment	Unemployment	Unemployment Rate (%)
City of Ripon	4,360	4,100	260	6.0
San Joaquin County	264,700	241,600	23,100	8.7
Stanislaus County	210,300	188,800	21,500	10.2
California	17,362	16,435,200	927,100	5.3

Source: EDD 2003

Data from EDD show that the highest employment sectors in San Joaquin and Stanislaus Counties combined are services (23 percent), retail (18 percent), government (17 percent), and manufacturing (13 percent). In 2001, the construction sector employed 24,000 persons, or six percent of the workforce in the two-county

region (EDD 2003). For major construction projects, the labor pool within a 90-minute commute includes Sacramento, Contra Costa, and Alameda Counties. These areas have large populations, including a labor force with adequate members of the trades required for construction of an energy facility.

PROJECT WORK FORCE

Construction Work Force

According to the Application for Certification (AFC), the construction of the MEGS facility would require nine months of labor, average 35 workers on-site, and require a maximum of 44 workers during the fifth (peak) month of construction. The tentative schedule would begin in February 2004 with completion in November 2004. **SOCIOECONOMICS Table 4** shows the distribution of workers by craft and month required for the construction. According to the AFC and labor data obtained from the EDD, there is sufficient labor force availability in the San Joaquin and Stanislaus County region to find the required construction trades. If necessary, adjacent Sacramento County and East Bay labor pools are also available for construction. **SOCIOECONOMICS Table 5** shows the annual averages and the average annual compounded growth rate for the trades in the two-county region.

SOCIOECONOMICS: Table 4
Project Monthly Construction Labor By Craft

Job Category	1	2	3	4	5	6	7	8	9	Totals
Boilermakers				2	4	2				8
Carpenters	4	6	8	8	4	2	2	1		35
Electricians	4	4	6	6	4	4	3	3	2	36
Insulation workers							2	2	1	5
Ironworkers	2	4	4	4	2					16
Laborers	4	4	6	6	4	4	3	3	2	36
Millwrights				2	4	4	2	1	1	14
Linemen	4	4	4	4						16
Operating engineers	3	3	2	2	3	3	3	2	1	22
Painters							2	4	4	10
Pipefitters	2	2	2	2	6	10	10	10	6	50
Craft Subtotal	**21**	**25**	**30**	**38**	**39**	**37**	**36**	**31**	**19**	**276**
Construction Manager	1	1	1	1	1	1	1	1	1	9
Field Engineer	1	1	2	3	3	3	2	2	2	19
Clerical	1	1	1	1	1	1	1	1	1	9
Commissioning Group						1	2	2	2	7
Staff Subtotal	**3**	**3**	**4**	**5**	**5**	**6**	**6**	**6**	**6**	**44**
Total Workforce	**24**	**28**	**34**	**41**	**44**	**43**	**42**	**37**	**25**	**320**

Source: Modesto Irrigation District, 2003

SOCIOECONOMICS: Table 5
Available Labor by Skill in the San Joaquin and Stanislaus County Region

Occupational Title	1999 Annual Average	2006 Annual Average	Average Annual Compounded Growth Rate (%)
Millwrights	110	120	1.3
Carpenters	2,680	3,520	4.0
Masons	1,070	1,410	4.0
Painters	850	1,110	3.9
Metal Workers	330	430	3.9
Electricians	1,690	2,170	3.6
Welders	1,520	1,830	2.7
Excavators	230	350	6.2
Graders	270	360	4.2
Industrial Truck Operators	7,000	8,260	2.4
Operating Engineers	320	390	2.9
Laborers	17,450	20,880	2.6
Pipefitters	740	930	3.3
Mechanical Engineers	160	190	2.5
Electrical Engineers	150	200	4.2
Plant and System Operators	1,300	1,440	1.5
Managers	670	760	1.8

Source: EDD 2003

Plant Operations Workforce

According to the AFC, MID will increase its current operation workforce by three full-time employees to meet the operational needs of the MEGS.

IMPACTS

Following is the Environmental Checklist that identifies potential impacts in this issue area. Below the checklist is a discussion of each impact, and an explanation of the impact conclusion.

ENVIRONMENTAL CHECKLIST	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
SOCIOECONOMICS: POPULATION, HOUSING, AND ECONOMIC (FISCAL AND NON-FISCAL)-- Would the project:				
a) Have substantial non-fiscal effects on employment and economy?				x
b) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				x
c) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				x
d) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				x
e) Have substantial fiscal effects on local government expenditures, property and sales taxes?				x
f) Have a significant minority or low-income population within a six-mile radius that may be subject to disproportionate adverse effects of the project?			x	
Public Services – Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered facilities, the construction of which could cause significant environmental impacts, or result in an inability to maintain acceptable service ratios, response times, or other performance objectives for the following:				
g) police protection?				x
h) schools?				x
i) medical and other public services and facilities?				x

DISCUSSION OF IMPACTS

A. Non-Fiscal Effects on Employment and Economy

The proposed MEGS project will require approximately nine months for construction, average 35 workers on-site, and require a maximum of 44 workers during the fifth (peak) month of construction. The majority of construction workers are expected to reside in the San Joaquin/Stanislaus County region, and, if necessary, additional workers can commute daily from the East Bay or Sacramento County. According to current data from the EDD, sufficient numbers of workers within the specialty trades reside in San Joaquin and Stanislaus Counties. Thus, the project will not directly or indirectly cause a significant impact on local employment resources in the area.

B. Induced Population Growth:

For reasons listed in **A.** above, staff does not expect any in-migration of construction workers and their families for this project. Thus, the project will not directly or indirectly induce substantial population growth in the area.

C. Displacement of Housing:

Staff does not expect housing to be displaced because of the project. Sufficient vacant housing exists if any construction workers seek temporary housing for the nine-month construction period. According to the 2000 US Census, the total housing stock (single- and multi-family, and mobile homes) for the City of Ripon was 3,432 units, with a 1.8 percent vacancy rate. In 2000, total housing stock for San Joaquin and Stanislaus Counties totaled 189,160 and 150,807, with vacancy rates of 4.0 and 3.8 percent. While these vacancy rates are considered somewhat low (the realty industry considers an average vacancy rate to be 5 percent), an average of only 35 workers will be on-site during construction, and because construction workers and workers in the specialty trades are available within the two-county region, staff does not expect any construction workers to relocate to the area.

The proposed MEGS project is not likely to significantly alter the location, distribution, density, or growth rate of the population of the City of Ripon, San Joaquin County, or Stanislaus County since construction impacts are of short duration, and only three new full-time employees will be hired to operate the facility.

D. Displacement of People:

No housing or population will be displaced by the proposed project.

E. Fiscal Effects on Local Government Expenditures, Property and Sales Tax

According to the AFC, the applicant estimates the MEGS capital cost to be $65 million, with the value of materials and supplies purchased locally estimated at $3.5 million. Because MID is a local public agency, it is exempt from property taxes. Therefore, the project will not generate any property tax revenues for the City of Ripon and San Joaquin County.

F. Adversely Affect Minority or Low-Income Populations:

The screening analysis shows that there is not a fifty-percent or greater minority or low-income population within a six mile radius of the proposed project. However, there is a small pocket of minority and low-income persons within two miles of the proposed project.

Staff has reviewed Census 2000 information that shows the minority population is less than 50 percent within a six-mile radius of the proposed MEGS project (please refer to **Socioeconomics Figure 1** in this Staff Assessment). However, as indicated in **Socioeconomics Figure 1**, there are multiple census blocks with greater than 50 percent minority persons within the six-mile radius. Staff considers these to be pockets or clusters. Staff also reviewed Census 2000 information that shows the low-income population is less than fifty percent within the same radius.

Based on the Socioeconomic analysis, staff has not identified significant direct or cumulative impacts resulting from the construction or operation of the project, and therefore there are no Socioeconomic environmental justice issues related to this project.

G. Police Protection:

Because there will be no in-migration of construction workers, staff does not expect significant impacts to police services.

H. Schools:

Because there will be no in-migration of construction workers, staff does not expect significant impacts to schools. Also, because MID is a local public agency, it is exempt from school impact fees. Therefore, the project will not be required to pay school impact fees normally assessed for commercial and industrial projects under Senate Bill 50.

I. Other Public Services:

Because there will be no in-migration of construction workers, staff does not expect significant impacts to other public services.

CUMULATIVE IMPACTS

Staff concludes that there are no cumulative impacts.

RESPONSE TO COMMENTS

Robert Sarvey: Intervenor agrees with staff assessment that unmitigated visual impacts will occur along the western boundary of the project. The Mitigation proposed will only provide significant screening after a long period of time depending on the landscaping growth rate. During the time that the projects landscaping will mature the projects unmitigated impact will exist. Any resident that chooses to sell their property prior to the maturity of the landscaping will have their sales price affected by their proximity to the plant. Other residents that choose to remain will be subjected to the significant adverse impact of the project.

Response: In general, the claims of diminished property value through decreased marketability are based on the reported concern about hazards to human health and safety and increased noise and visual impacts associated with living in proximity to locally unwanted land uses such as power plants, freeways, high voltage transmission lines, landfills, hazardous waste sites, etc. The issue of property value impacts associated with facility siting has been given much attention over the past 20 years, and as a result, has been the subject of extensive study. Overall, staff analysis found no significant adverse impacts associated with construction or operation of the project in any of the technical areas.

On past projects, staff researched the literature on proximity impacts analysis and cites the Kinnard-Dickey paper, A Primer on Proximity Impact Research: Residential Property

Values Near High-Voltage Transmission Lines as a comprehensive study on this topic. Previous studies cited in the Kinnard-Dickey paper show that three procedures are used to measure any difference between sales prices, marketing periods and/or sales volume of proximate properties and those of competitive properties in control areas: 1) Paired Sales Analysis - finding sales of properties within the impact area and comparing them with sales of similar, competitive properties in the control area. Any price differentials are noted, and any pattern of such differences is identified; 2) Survey Research/Opinion - this method is used as either a supplement or substitute for analysis of market sales transaction data. Potential purchasers either will or will not buy; they either will or will not pay the same or similar prices for proximate properties. It is important to note that Survey Research/Opinion merely reflects responses to hypothetical situations by interviewees who are not necessarily prospective buyers, especially in the impact area under study; and 3) Market Impact Studies Using Multiple Regression Analysis (MRA) in the Hedonic Pricing Model Format - gathering data files on as many market sales transactions as possible within the impact area and within one or more similar control areas over a specified time period, usually a few years prior to an awareness of the proposed project. The extended time period is used to identify and measure any price/value impact that might occur within the impact area after an awareness of the project occurs. This type of "before and after" analysis supplements the comparison of levels and trends and prices, marketing time, and sales volume within the impact area and those in the control area. The post-announcement sales information also provides a basis for testing the likely duration of any value impact that might be identified. The MRA approach to market proximity impact analysis is preferred in the current professional and academic literature because the model reflects what buyers and sellers actually do as opposed to what potential buyers say they might do under specified hypothetical circumstances. Further, the use of large sets of sales data indicate that the results are more representative of the market than those of the paired sales studies.

Studies cited in the Kinnard-Dickey paper shows that three possible effects to the market value of residential properties have been claimed: 1) Diminished Price - which is identified by comparing unit prices that are proximate to power lines to unit prices of similar and competitive properties more distant from power lines; 2) Increased Marketing Time - even when proximate properties sell at or near the same prices as more distant control properties, claimants argue that proximate properties take longer to sell. Such increased marketing time can represent a loss to the seller by deferring receipt, availability, and use of sale proceeds; and 3) Decreased Sales Volume – which is a more subtle indicator of diminished property value if potential buyers decide not to buy in the impact area. A measurable decrease in sales volume in the impact area compared with sales volume in the control area where otherwise similar properties purportedly still are selling can represent evidence of decreased market value from proximity to the high voltage transmission lines (or claimed hazard).

The findings of the Kinnard-Dickey paper indicate the following:

- Distinguish between fear of health hazards by current and potential residents and the market behavior of buyers and sellers in the same area. It is misleading to confuse opinion responses of hypothetical buyers based on fear with actual past and likely behavior of buyers in market areas identified as proximate to the claimed hazard.

- Studies of market behavior of purchasers who are near sources of claimed hazards show that the more informed a potential buyer is, the less likely that buyer is to be deterred from purchasing near the claimed hazard. Knowledge of occurrence probabilities, awareness of findings of reproducible scientific studies, and understanding of the causal nexus lead to a greater willingness of the potential buyer to live near the claimed hazard, and has been found to minimize price effects on proximate residential properties.
- MRA studies indicate that any observed negative price, marketing time, and sales volume effects tend to be statistically nonsignificant; results could easily have occurred randomly or by chance, and do not necessarily represent a consistent, systematic market response to locations proximate to the claimed hazard.

CONCLUSIONS

The proposed project would not induce significant population growth in the area, nor would it involve the displacement of housing or people. In addition, the project will not significantly impact schools or public services. Therefore, the project will not result in any significant socioeconomic impacts to population, housing, schools, or public services.

PROPOSED CONDITIONS OF EXEMPTION

None proposed.

REFERENCES

Department of Finance, State of California. 2000. Internet Website, City/County Population and Housing Estimates http://www.dof.ca.gov/HTML/DEMOGRAP/repndat.

Employment Development Department, State of California. 2003. Internet Website, http://www.calmis.ca.gov and http://www.lmi4ed.ca.gov.

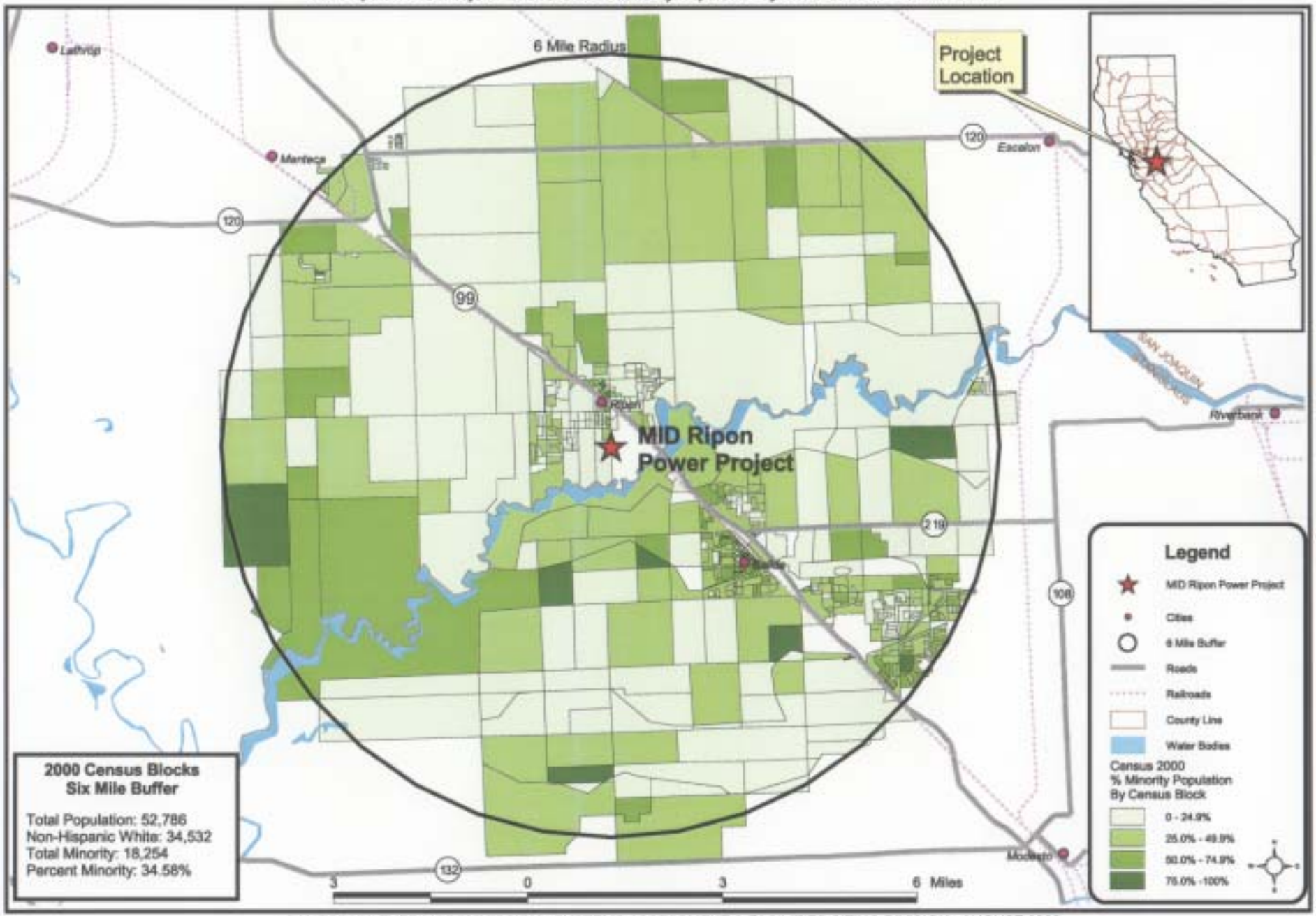
MID2003a - Modesto Irrigation District/Van Hoy (tn:28524). Submittal of the Small Power Plant Exemption for the Modesto Electric Generation Station 95 MW, natural gas fired simple cycle power plant. Submitted to CEC/Therkelsen/Dockets on 4/21/03.

MID2003l - CH2MHILL/Carrier (tn:28904). Data Responses, Set 1A. Submitted to CEC/Reede/Dockets on 6/6/03.

United States Bureau of the Census. 1990 and 2000 Census of Population and Housing. WebPages http://venus.census.gov.

SOCIOECONOMICS - FIGURE 1

MID Ripon Power Project - Census 2000 Minority Population by Census Block - Six Mile Buffer



CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, AUGUST 2003

SOURCE: California Energy Commission Statewide Transmission & Power Plant Maps 2002, Census 2000 PL 94-171 Data - Matrix PL2

TRAFFIC & TRANSPORTATION

Testimony of James Adams

INTRODUCTION

The Traffic and Transportation Analysis of the Modesto Irrigation District's Ripon Generation Station (MEGS) focuses on the project's transportation systems in the vicinity of the project. This analysis examines the projects compatibility with applicable laws, ordinances, regulations, and standards (LORS). This assessment also analyzes and identifies potential impacts related to the construction and operation of the project on the surrounding transportation systems and roadways, and potential mitigation measures to avoid or lessen those impacts. It includes the evaluation of the influx of large numbers of construction workers, and how, over the course of the construction phase, the movement of these workers can increase roadway congestion and also affect traffic flow.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

Federal, state, and local regulations that are applicable to the proposed project are listed below. Regulations related to the transportation of hazardous materials, which are designed to control and mitigate for potential impacts. The Applicant has indicated its intent to comply with all federal, state, and local regulations related to the transport of hazardous materials. This issue is also addressed in the section entitled **HAZARDOUS MATERIALS**.

FEDERAL

- Title 49, Code of Federal Regulations, Sections 171-177, governs the transportation of hazardous materials, the types of materials defined as hazardous, and the marking of the transportation vehicles.
- Title 49, Code of Federal Regulations, Sections 350-399, and Appendices A-G, Federal Motor Carrier Safety Regulations, address safety considerations for the transport of goods, materials, and substances over public highways. Section 353 defines hazardous materials.

STATE

- California Vehicle Code, Sections 31303-31309, regulates the highway transportation of hazardous materials, the routes used, and restrictions thereon.
- Sections 31600-31620 regulate the transportation of explosive materials.
- Sections 32000-32053 regulate the licensing of carriers of hazardous materials and include noticing requirements.
- Sections 32100-32109 establish special requirements for the transportation of substances presenting inhalation hazards and poisonous gases.
- Sections 34000-34100 establish special requirements for the transportation of flammable and combustible liquids over public roads and highways.

- Sections 34500, 34501, 34501.2, 34501.3, 34501.4, 34501.10, 34505.5-7, 34506, 34507.5 and 34510-11 regulate the safe operation of vehicles, including those which are used for the transportation of hazardous materials.
- Sections 2516 et seq. addresses the safe transport of hazardous materials.
- Sections 2500-2505 authorize the issuance of licenses by the Commissioner of the California Highway Patrol for the transportation of hazardous materials including explosives.
- Sections 13369, 15275, and 15278 address the licensing of drivers and the classifications of licenses required for the operation of particular types of vehicles. In addition, the possession of certificates permitting the operation of vehicles transporting hazardous materials is required.
- California Streets and Highways Code, Sections 117 and 660-72, and California Vehicle Code, Sections 35780 et seq., require permits for the transportation of oversized loads on county roads.
- California Streets and Highways Code, Sections 660, 670, 1450, 1460 et seq., 1470, and 1480, regulates right-of-way encroachment and the granting of permits for encroachments on state and county roads.

All construction within the public right-of-way will need to comply with the "Manual of Traffic Controls for Construction and Maintenance of Work Zones" (Caltrans, 1996).

LOCAL

The 1998 City of Ripon Urban Area General Plan identifies roadway definitions, level of service[1], standards for traffic, and other transportation modes including transit service, bicycle circulation network, inter-city rail service, and air service (City of Ripon 1998). The City of Ripon's policies and San Joaquin County's policies related to traffic and circulation needs are identified.

The 2001 San Joaquin County Regional Transportation Plan is a comprehensive long-range transportation-planning document that serves as a blueprint to guide public policy decisions regarding transportation expenditures and financing (San Joaquin County 2001).

SETTING

The major highways in the area of the project site are State Route 99 (SR), and SR 120. The local roadways potentially affected by the proposed project are Second Street, South Stockton Avenue, Jack Tone Road, Doak Boulevard, and Main Street. Second Street and South Stockton Avenue would provide the primary connection to the project site from SR 99 (see **Traffic and Transportation Figure 1**).

[1] When evaluating a project's potential impact on the local transportation system, staff uses levels of service measurements as the foundation on which to base its analysis. LOS measurements represent the flow of traffic. In general, LOS ranges from "A" with free flowing traffic, to "F" which is heavily congested with flow stopping frequently.

The project site is located at the intersection of Doak Boulevard and South Stockton Street. The City of Ripon is currently installing water, sewer, and storm water pipelines along the unpaved segments of these roads. After this infrastructure work by the City is completed, these road sections will be paved (MID 2003a, pg. 8.10-4). Second Street has an overcrossing on SR-99 and provides access to the highway's off-and-onramps. Second Street, west of South Stockton, is considered a collector road with a Level of Service (LOS) rating of D. South Stockton and Doak Boulevard are also collector roads with a LOS rating of A (City of Ripon 1998, pg. 3-18). There is also an off and onramp from SR-99 via Wilma Avenue.

SR 99 is the primary north-south travel route in the project vicinity and is a six-lane highway providing access to the site via Jack Tone Road (West Main Street) and Second Street. SR-99 traverses the length of, and bisects, the City of Ripon. SR-120 is a four-lane east-west highway which connects Interstate-580 and Interstate 5 to SR-99. Both SR-99 and 120 are under the jurisdiction of the California Department of Transportation (Caltrans). At Jack Tone Road, SR 99 carries approximately 107,000 vehicles per day and is rated LOS D.

Public transit options for the City of Ripon include inter-City bus and rail service, San Joaquin Regional Transit District Fixed Route and Dial-A-Ride services, and City of Ripon dial-a-ride service. In addition, Greyhound Bus Lines will drop off passengers in Ripon, but has no pick-up service (City of Ripon, 1998, pg. 3-10).

There are two elementary schools and one high school located west of SR-99 just off Main Street and Jack Tone Road (see **Traffic and Transportation Figure 1**) which have school buses transporting students in the project vicinity. The bus routes to and from the schools use Acacia and Main Streets, and Jack Tone Road. The typical school day is 8:30AM to 3PM.

The proposed MEGS site is located adjacent to the City of Ripon wastewater treatment plant and about 0.25 mile from the existing MID substation. The Fox River Paper Company is across the street from the eastern border of the site.

PROJECT FEATURES

This project would include the construction of a potable water line, stormwater and wastewater discharge lines, and a natural gas pipeline. The proposed locations of these lines would be within 30 feet of the project site underneath South Stockton Avenue and Doak Boulevard. MEGS project water supply line would connect with new City of Ripon water and sewer lines noted above. The applicant has decided to add a zero-liquid discharge system (ZLD) to the project. Approximately 0.25 mile of new 69-kV sub-transmission line and fiber optic cable, and 0.25 mile of new eight- inch diameter natural gas pipeline would also be installed.

IMPACTS

Following is the Environmental Checklist that identifies potential impacts in this issue area. Below the checklist is a discussion of each impact, and an explanation of the impact conclusion.

ENVIRONMENTAL CHECKLIST	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
TRANSPORTATION/TRAFFIC -- Would the project:				
a) Cause an increase in traffic that 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)?			X	
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?				X
c) 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?				X
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				X
e) Result in inadequate emergency access?				X
f) Result in inadequate parking capacity?				X
g) Create a significant hazard to the public or the environment through the routine transportation of hazardous material?		X		

DISCUSSION OF IMPACTS

A. Increase in Traffic:

The project is expected to generate 28 daily round trips round trips during the average construction period for nine months, and 35 daily round trips during the peak construction period, which will last two months. Operation of the MEGS will require three additional full-time staff (MID 2003a, pg. 8.10-12).

According to the Circulation Element of the Ripon General Plan, the upgrade of South Stockton Avenue and Doak Boulevard is intended to serve residential and industrial districts in that area (City of Ripon 1998, pg. 3-6). The MEGS project would generate a maximum of 35 afternoon peak hour trips (during the peak construction period). The level of service at the South Stockton and Second Street intersection would remain at LOS D with the addition of project construction traffic. It is anticipated that the intersection of Doak Boulevard and South Stockton would, after the improvements under way are completed, have a LOS A rating (City of Ripon 2003a). The applicant has stated that the construction contractor will prepare a construction traffic control

plan and implementation program that addresses timing of heavy equipment and building material deliveries, signing, lighting, traffic control device placement, and establishing work hours outside of peak traffic periods (MID 2003a, pg. 8.10-14). This should be done in coordination with the City of Ripon and Caltrans as appropriate.

The traffic control plan mentioned above would also cover the construction of the project's linear features which are a ZLD system, and a natural gas pipeline (installed by PG&E). It would also include a discussion about the use of flagmen and signage for temporary lane closures. In addition, this traffic control plan should include timing of linear facilities construction to take place outside peak traffic periods to avoid traffic flow disruptions.

B. Exceed Established Level of Service Standards:

The addition of MEGS project traffic will have no impact on the existing average levels of service (LOS) on SR 99 (between Jack Tone Road and Second Street), or on Second Street and South Stockton Avenue in the immediate vicinity of the proposed project site. Each of these roads is expected to operate at an acceptable level of service with the addition of project construction traffic (i.e., operating at LOS D or better according to the City of Ripon Urban Area General Plan for the area where the proposed MEGS project would be located). Staff has concluded that these affected roadways will experience no significant and/or adverse impacts from this project as both have sufficient capacity to absorb all project-generated traffic. The applicant has agreed to repair any road that is damaged during construction to its original condition to the extent possible (MID 2003a, pg. 8.10-12).

Decrease in service levels resulting from temporary lane closures related to construction of linear facilities would also be discussed in the construction traffic control plan to offsets these traffic impacts.

No traffic impacts would result during operation of the MEGS since a negligible amount of additional employee trips (i.e., three additional trips) are expected. Depending on which option is selected for the ZLD system, there may be an additional truck trip per week and another truck trip per month. These additional trips will not result in any significant adverse impact on the local roads.

C. Change in Air Traffic Patterns:

The MEGS has no major commercial aviation center in the area. The closest airports are the Modesto Airport (10 miles south), and the Stockton Airport (15 miles north). The stack height will not penetrate the aviation "regulatory surface" as defined by the Federal Aviation Administration (FAA); therefore, the MEGS should not impact air traffic safety.

D. Increase in Traffic Hazards:

Some delays and traffic congestion (i.e., blockage of through traffic) may occur with heavy construction vehicles driving south on Second Street and Stockton Avenue. This issue would be addressed in the traffic control plan. As noted above, the school bus route uses Acacia and Main Streets, and Jack Tone Road. Most of the construction traffic related to the MEGS will not utilize these roads, but will access

the site by way of Second Street and South Stockton Avenue. Therefore, construction traffic will not have an adverse and significant impact on bus service or the safety of students.

The Applicant has indicated its intent to comply with all weight and load limitations on state and local roadways and would seek permits from the City of Ripon and Caltrans as needed.

E. Inadequate Emergency Access:

There is a fire station on South Stockton between First and Main Street, about 0.25 miles east of the MEGS site. The nearest hospital is located in Manteca. The project will not lead to inadequate emergency access, because intersections impacted by construction will be maintained at an acceptable service level by Caltrans and the City of Ripon with the implementation of a construction traffic control plan. In addition, the City of Ripons' improvements to South Stockton and Doak Boulevard will provide easier access for emergency service. Therefore, no traffic congestion affecting emergency access is expected on Second Street and South Stockton Avenue near the project site. The applicant has agreed that construction traffic would not utilize Locust Avenue.

The Applicant has also indicated their intent to maintain emergency access on applicable roadways during construction of linear facilities.

F. Inadequate Parking Capacity:

Ample parking for construction site personnel and visitors will be provided in laydown areas owned by MID on the west and south side of the project site along South Stockton Avenue and Doak Boulevard.

G. Transportation of Hazardous Material:

The construction and operation of the plant will require the transportation of various hazardous materials, including: aqueous ammonia, solvents, lube oils, paint, paint thinners, adhesives, batteries, construction gases, etc. The transport of hazardous materials over city streets has the potential to result in an increase in traffic hazards. MEGS has indicated that the transportation of hazardous materials to and from the site will be conducted in accordance with California Vehicle Code Section 31300. It is anticipated that the route for delivery of hazardous materials would be SR-99 to Second Street, and proceed south on South Stockton to the project site. If the Applicant follows the LORS for handling and transportation of hazardous materials (as discussed further in the Hazardous Materials section of the Initial Study), no significant impact is expected.

CUMULATIVE IMPACTS

Six proposed projects have been identified to occur in the vicinity of the proposed MEGS. The Artman Milk Transport Expansion at the corner of Doak and Acacia Streets,and the NuLaid Foods, Inc. expansion have not been approved by the City of Ripon and the completion date is unknown. The industrial park expansion (which includes the MEGS) has three components. The first is the Arrow Asphalt project which

will be discussed at the City of Ripon Council meeting in July 2003. The second is the Waggoner Construction yard expansion which comes before the City in August 2003. Completion times for these two projects are unknown. The third project is MEGS. In addition, a compressed natural gas station at 240 Doak Boulevard will be completed in early 2005. Based on the SPPE application, and input from the City of Ripon, it is unlikely that construction, material deliveries, or workforce commutes related to these projects would occur during the same period as for the MEGS project. Therefore, staff concludes that there will be no significant cumulative impacts (City of Ripon 2003e).

COMPLIANCE WITH LORS

If the project owner implements all of the measures discussed above, the MEGS would be in compliance with all applicable LORS.

CONCLUSIONS

Provided that the Applicant develops a construction traffic control and implementation program and follows all LORS acceptable to Caltrans and the City of Ripon for the handling of hazardous materials, the project will result in less than significant impacts.

REFERENCES

City of Ripon 2003a. City of Ripon General Plan 2035, 1998.

City of Ripon 2003b. Traffic Data Information. Facsimile transmittal from Sheryl Prater, Development Specialist, City of Ripon, to James Adams, California Energy Commission, May 21, 2003.

City of Ripon 2003c. Letter and Title 16 Development Code Book from Mitzi Johnson, to James Adams on May 21, 2003.

City of Ripon 2003d. Personal Communication between Mitzi Johnson, Executive Assistant, City of Ripon, and James Adams on May 23, 2003.

City of Ripon 2003e. Personal Communication with Ernest Tyhurst, Director of Planning & Economic Development, City of Ripon, and James Adams on May 27, 2003.

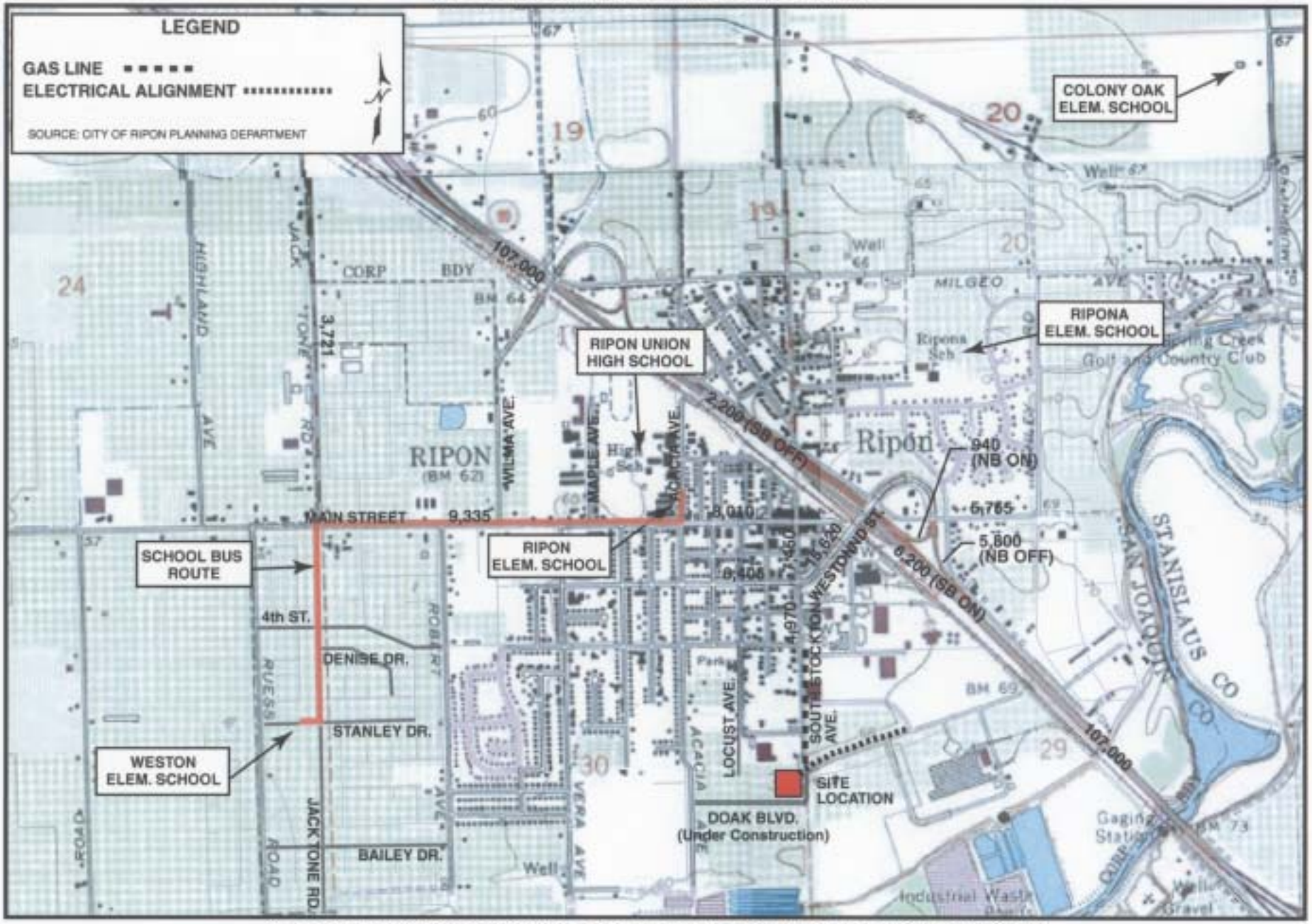
MID (Modesto Irrigation District) 2003a. Application for Small Power Plant Exemption, Woodland Generating Station 2 Project (01-SPPE-1). Submitted to the California Energy Commission, April 21, 2003.

MID (Modesto Irrigation District) 2003b. Data Requests and Responses – Set 1B (Data Requests Nos. 2-9, 11, 13-22, 25-38) Submitted to the California Energy Commission, May XX, 2003.

San Joaquin Council of Governments, Regional Transportation Plan 2001.

TRAFFIC AND TRANSPORTATION - FIGURE 1

MID Electric Generation Station - 2001 ADT Volumes



CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, AUGUST 2003

SOURCE: AFC Figure 8.10-2 and TOPO base map

TRANSMISSION LINE SAFETY AND NUISANCE

Testimony of Obed Odoemelam, Ph.D.

INTRODUCTION

The Modesto Electric Generation Station (MEGS) project is proposed by the applicant (Modesto Irrigation District, MID) for an 8-acre parcel within a 12.25-acre site at the intersection of South Stockton Avenue and Doak Boulevard in the City of Ripon, San Joaquin County California. According to information from the applicant (MID 2003a, pgs. 1-1, 1-2, 2-1, and 5-4 through 5-6), the project's power delivery line would be a new 0.25-mile 69 kV overhead subtransmission line extending from the project site to MID's 69 kV Stockton Substation to the east. The route was chosen to ensure placement alongside rights-of-way (ROW) of a private road to the Fox River Paper Plant. Such line placement within existing rights-of-way reduces impacts and is in keeping with present state policy on the location of new high-voltage power lines. After delivery to the Stockton Substation, the project's power would then be delivered to the MID power grid through existing MID distribution lines. As detailed by the applicant, the proposed line would be located on approximately seven wood or metal poles about 60 feet tall. The structure of these pole supports and line configurations have been provided by the applicant as related to safety and electric and magnetic field (EMF) reduction efficiency (MID 2003a, p. 5-10).

Since the proposed MEGS line would be located within the MID service area, it would be designed according to existing MID guidelines and construction practices reflecting compliance with applicable laws, ordinances, regulations, and standards (LORS), and California Public Utilities Commission's (CPUC) general orders on electric and magnetic field (EMF) reduction. As noted by MID (MID 2003a, pgs. 5-3, 5-4 and 5-6), both it and the other California municipal utilities voluntarily comply with these CPUC general orders, although they were specifically established by CPUC for utilities under CPUC regulation. Such voluntary compliance reflects the effort of the state's municipal utilities to facilitate a uniform handling of the EMF reduction and other line safety issues. The purpose of this analysis is to assess the proposed line construction and operational plan for incorporation of the measures necessary for such compliance.

Staff's analysis focuses on the following issues, which relate primarily to the physical presence of the line, or secondarily to the physical interactions of line electric and magnetic fields:

- aviation safety;
- interference with radio-frequency communication;
- audible noise;
- fire hazards;
- hazardous shocks;
- nuisance shocks; and
- EMF exposure.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

AVIATION HAZARD

The physical presence of the proposed line could pose an aviation hazard to area aviation if the line protrudes high enough into the navigable air space or is located close enough to area airports. The potential for such a hazard is addressed through the following LORS:

- Title 14, Part 77 of the Federal Code of Regulations (CFR), "Objects Affecting Navigable Airspace." Provisions of these regulations specify the criteria used by the Federal Aviation Administration (FAA) for determining whether a "Notice of Proposed Construction or Alteration" is required for potential obstruction hazards. The need for such a notice depends on factors related to the height of the structure, the slope of an imaginary surface from the end of nearby runways to the top of the structure, and the length of the runway involved. Such notification allows the FAA to ensure that the structure is located to avoid any significant hazards to area aviation.
- FAA Advisory Circular (AC) No. 70/460-2H, "Proposed Construction and or Alteration of Objects that may Affect the Navigation Space." This circular informs each proponent of a project that could pose an aviation hazard of the need to file the "Notice of Proposed Construction or Alteration" (Form 7640) with the FAA.

FAA AC No. 70/460-1G, "Obstruction Marking and Lighting." This publication 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.

AUDIBLE NOISE AND RADIO INTERFERENCE

The physical interactions of electric fields from transmission lines could produce audible noise and interfere with radio-frequency communication in the area. Such impacts are prevented or mitigated through compliance with the following regulations and practices:

- Federal Communications Commission (FCC) regulations in Title 47 CFR, Section 15.25.
- General Order 52 (GO-52), California Public Utilities Commission (CPUC). Industry design standards and maintenance practices.

FIRE HAZARDS

Fire hazards from overhead transmission line operation are mostly related to sparks from conductors of overhead lines or direct contact between the line and nearby trees and other combustible objects. Such fires are prevented through compliance with the following regulations

- General Order 95 (GO-95), CPUC, "Rules for Overhead Electric Line Construction" specifies tree-trimming criteria to minimize the potential for power line-related fires.
- Title 14 Section 1250 of the California Code of Regulations; "Fire Prevention Standards for Electric Utilities" specifies utility-related measures for fire prevention.

SHOCK HAZARD

All transmission and subtransmission line operations pose a risk of hazardous or nuisance shocks to humans. The hazardous shocks are those possible from direct or indirect contact between an individual and the energized line. 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. The nuisance shocks by contrast, are caused by current flow at levels generally incapable of causing significant physiological harm. They result most commonly from contact with a charged metallic object in the transmission line environment. The following regulations are intended to prevent such shocks:

- GO-95, CPUC. "Rules for Overhead Line Construction". These rules specify uniform statewide requirements for overhead line construction regarding ground clearance, grounding, maintenance and inspection. Implementing these requirements ensures the safety of the general public and workers working on or around the line.
- Title 8, CCR, Section 2700 et seq., "High Voltage Electric Safety Orders". These safety orders establish essential requirements and minimum standards for safely installing, operating, and maintaining electrical installations and equipment.
- National Electrical Safety Code, Part 2: Safety Rules for Overhead Lines. Provisions of this code are intended to minimize the potential for direct or indirect contact with the energized line.
- The National Electrical Safety Code and the joint guidelines of the American National Standards Institute (ANSI) and the Institute of Electrical and Electronics Engineers (IEEE).

IMPACTS

The following Environmental Checklist identifies the potential significance of the proposed line operations with respects to Transmission Line Safety and Nuisance. Following the checklist is a discussion of each impact, and an explanation of the conclusion on its potential significance.

ENVIRONMENTAL CHECKLIST	Potentially Significant	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
TRANSMISSION LINE SAFETY AND NUISANCE -- Would project operation:				
a) Pose an aviation hazard to area aircraft?			X	
b) Lead to interference with radio-frequency communication?		X		
c) Pose a hazardous or nuisance shock hazard?		X		
d) Pose a fire hazard?		X		
e) Expose humans to higher electric and magnetic field levels than justified by existing knowledge?		X		

DISCUSSION OF IMPACTS

A. Aviation Hazard:

As noted by the Applicant (MID 2003a, p. 5-9), the proposed MEGS project site is approximately ten miles northwest of the Modesto Airport and seven miles southwest of the Oakdale Airport. The Stockton Metropolitan Airport is 12 miles to the north. Staff agrees with the Applicant that the proposed line route is too far from these area airports (according to existing FAA evaluative criteria) to pose a significant hazard to area aviation. This means that a Notice of Construction or Alteration would not be required.

B. Radio Frequency Interference:

As discussed by the applicant (MID 2003a, p. 5-8), the electric fields from 69 kV lines are not strong enough to produce the radio noise or television interference that is possible from lines of 345 kV or higher (as noted by EPRI 1982). The applicant specifically drew from their experience with the more than 200 miles of 69 kV lines they presently operate and concluded that no such noise or television interference would occur during operations. The applicant, however, intends to mitigate any related complaints whenever they are lodged.

C. Shock Hazard:

The applicant (MID 2003a, pgs. 5-6 through 5-9) intends to comply with the requirements of applicable regulations and standards intended to prevent hazardous or nuisance shocks to humans.

D. Fire Hazard:

The issue of concern to staff is the likelihood of a fire hazard from operation of the proposed line. The Applicant (MID 2003a, p. 5-9) intends to comply with applicable regulations intended to ensure that the line is adequately located away from trees and other combustible objects and materials to prevent fires or minimize such fires when they occur.

E. Electric and Magnetic Field Exposure:

Exposure to power-frequency electric and magnetic fields is considered by some researchers to be capable of biological impacts at high levels. As noted by the Applicant (MID 2003a, p. 5-7), power line and other such fields have not been established as capable of significant biological effects in humans at normal environmental levels. The CPUC has established specific design requirements for dealing with such fields in light of present knowledge. As previously noted, MID and the other California municipal utilities voluntarily comply with these requirements. The question of concern to staff is whether the proposed line's field reducing design would be adequate to maintain possible human exposures within limits reflected in CPUC's requirements on the issue.

As noted by the Applicant (MID 2003a, pgs. 5-8), maximum electric field strengths as typical for the proposed MID design will range from 0.02 kV/m to 0.37 kV for the area between the project site and the Stockton Substation to be interconnected. These field strengths are within the range for MID lines of the same voltage. The maximum magnetic field strength will range from approximately 2.73 milliGauss (mG) to 20.54 mG for the line configurations proposed. These calculated values reflect the specific magnetic field reduction measures to be implemented when the proposed line is located alone or with under-built 17 kV distribution lines. These magnetic field strengths are within the range expected for MID lines of the same voltage and current-carrying capacity and are much lower than the limits established by the relatively few states with regulatory limits.

ENVIRONMENTAL JUSTICE

Staff has reviewed Census 2000 information that shows the area's minority population as less than 50 percent within a six-mile radius of the proposed MEGS Project (please, refer to the **Socioeconomics Figure 1** in this Staff Assessment). However, as indicated in **Socioeconomics Figure 1**, there are multiple area census blocks with minority populations of greater than 50 percent. Staff considers these to be pockets or clusters. Staff also reviewed Census 2000 information that shows the low-income populations as less than 50 percent within the same radius.

Based on this Transmission Line Safety and Nuisance analysis, which included consideration of information provided by participants at workshops, staff established that no significant direct or cumulative impacts would result from operation of the project, and therefore, that no transmission Line Safety and Nuisance-related environmental justice issues would be related to this project.

CONCLUSIONS

Staff has determined that the proposed project line will be designed and operated in compliance with all applicable health and safety LORS. The following conditions of exemption are recommended to ensure implementation of the necessary design and operational measures.

REFERENCES

Electric Power Research Institute (EPRI) 1982. Transmission Line Reference Book: 345 kV and Above.

Energy Commission Staff 1992. High Voltage Transmission Lines: Summary of Health Effects Studies. California Energy Commission Publication, P700-92-002

MID (Modesto Irrigation District). 2001a. Application for Small Power Exemption, Woodland Generating Station 2 Project (01-SPPE-1). Submitted to the California Energy Commission on May 4 2001.

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.

TRANSMISSION SYSTEM ENGINEERING

Testimony of Laiping Ng and Al McCuen

SUMMARY OF CONCLUSIONS

Staff concludes that the switchyard, outlet lines and termination are acceptable. No additional new transmission facilities, other than those proposed by the applicant for connecting to the grid, are required for the interconnection of the Modesto Irrigation District (MID) Electric Generation Station (MEGS). The marginal adverse impacts found in the Western and Cal-ISO grids can be mitigated effectively by congestion management, Special Protection Schemes (SPS), or operation procedures.

INTRODUCTION

The Transmission System Engineering (TSE) analysis identifies whether or not the power plant and transmission facilities associated with the proposed project will cause a substantial adverse impact on the environment or energy resources. It also assesses whether or not the applicant has accurately identified all interconnection facilities required as a result of the project.

Staff's analysis evaluates the power plant switchyard, outlet line, termination and downstream facilities identified by the applicant.

Additionally, under the California Environmental Quality Act (CEQA), the Energy Commission must conduct an environmental review of the "whole of the action," that may include facilities not licensed by the Energy Commission (Cal. Code Reg., tit. 14, §15378). Therefore, staff must identify and evaluate whether any new or modified transmission facilities are required for the project's interconnection to the electric grid and also beyond the project's interconnection with the existing transmission system that are required as a result of the power plant addition to the California transmission system.

Because MID is not part of the California Independent System Operator (Cal-ISO) grid, the Cal-ISO is not directly responsible for ensuring electric system reliability for the generator interconnection and does not plan to provide analysis and testimony for this project. The staff therefore has increased responsibility to evaluate the system reliability impacts of the project and provide conclusions and recommendations to the Energy Commission.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS

Staff is charged with evaluating whether the project as proposed has a substantial adverse impact on the environment or energy resources. The staff has identified the following LORS as useful as significance criteria for evaluating whether the project as proposed will have a substantial adverse impact on the environment or energy resources, and provides for reliable electric power transmission.

- California Public Utilities Commission (CPUC) General Order 95 (GO-95), “Rules for Overhead Electric Line Construction,” formulates uniform requirements for construction of overhead and underground 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. MID has voluntarily agreed to comply with this Rule.
- The National Electric Safety Code, 1999 provides electrical, mechanical, civil and structural requirements for overhead electric line construction and operation.
- The North American Electric Reliability Council (NERC) and Western Electricity Coordinating Council (WECC) Planning Standards have been merged and now are referred to as the “NERC/WECC Planning Standards.” These standards provide the system performance standards used in assessing the reliability of the interconnected system. Certain aspects of the NERC/WECC standards are either more stringent or more specific than the NERC standards. 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 levels designed to prevent system cascading and the subsequent blackout of islanded areas during a major disturbance (such as loss of multiple 500 kV lines in a 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 2001).
- Cal-ISO Grid Planning Standards also provide standards and guidelines to assure the adequacy, security and reliability in the planning of the Cal-ISO transmission grid facilities. The Cal-ISO Grid Planning Standards incorporate the WECC/NERC Planning Standards. With regard to power flow and stability simulations, these Planning Standards are similar to the combined WECC and NERC Planning Standards for Transmission System Contingency Performance. However, the Cal-ISO Standards also provide some additional requirements that are not found in the WECC or NERC Planning Standards. The Cal-ISO Standards apply to all participating transmission owners interconnecting to the Cal-ISO controlled grid. They also indirectly apply when there are any impacts to the Cal-ISO grid due to facilities interconnecting to adjacent controlled grids not operated by the Cal-ISO (Cal-ISO 2002a).

PROJECT DESCRIPTION

The proposed MEGS site is located in the City of Ripon in San Joaquin County, California. The MEGS is nominally rated at 95 MW. As proposed, the MEGS would connect to a new switchyard on the project site that would connect to the existing MID 69 kV Stockton substation.

POWER PLANT SWITCHYARD

The power plant design consists of two combustion turbine (CT) generators. Each CT would generate approximately 50 MW. The plant net electrical output would be 95 MW. The CTs would generate at 13.8 kV and use step-up transformers, each rated at 65 MVA, to transform voltage to 69 kV (MID 2003a, pages 2-2, 2-10). As proposed by the Applicant, the high voltage terminals of the transformer would be connected to the existing Stockton 69 kV substation by a 0.25 mile overhead double-circuit 69 kV line and the 69 kV circuit breakers. The Stockton 69 kV substation would be enlarged by two switching bays to accommodate the new transmission line (MEGS 2003a, pages 2-10, 5-8).

NEW TRANSMISSION LINE

The new 0.25-mile long 69 kV double-circuit transmission line would exit the MEGS switchyard traveling east across South Stockton and parallel to the private road into the Fox River Paper Plant. The line may be on the north or the south side of this private road, depending on the arrangements that are made with the landowner. If the double-circuit line is built on the north side of the road, it would be “overbuilt” on an existing 17 kV alignment. The wood or metal poles would have a 17 kV circuit installed below the two 69 kV circuits (MID 2003a, Figure 5-1). The transmission line would extend along the private road until it reaches the Stockton substation (MID 2003a, pages 2-10, 5-4). The proposed connection facilities would also require 7 new wood or metal poles. A fiber optic communications cable would also be placed on the same poles (MID 2003a, pages 2-10). The route of the new transmission line is shown in Figure 2.1 of the MEGS Application.

ANALYSIS

SYSTEM RELIABILITY

Introduction

A system reliability impact study for connecting a new power plant to the existing power system grid is performed to determine the interconnection facilities to the grid, downstream transmission system impacts, and their mitigation measures in conformance with system performance levels as required in Utility reliability criteria, NERC planning standards, and WSCC reliability criteria. The study identifies both positive and negative impacts, and also for the reliability criteria violation cases (i.e., for the negative impacts) determines the additional transmission facilities or other mitigation measures. The study is conducted with and without the new generation project and its interconnection facilities with the computer model cases for the year the project will come on-line. The study, in general, includes Load Flow study, Transient Stability

study, and Short Circuit study focused on thermal overloads, voltage deviations, system stability (excessive oscillations in generators and transmission system, loss of loads, or cascading outages), and short circuit duties. The study must be conducted under normal conditions (N-0) of the system with all system elements in service for the scenario and also for all appropriate contingency/emergency conditions, which include the loss of a single system element (N-1) such as a transmission line, a transformer, or a generator and also include the simultaneous loss of two system elements (N-2) such as two transmission lines or a transmission line and a generator. In addition to the above analysis, special studies may be performed to measure system losses and to verify whether sufficient active or reactive powers are available in the area system or area sub-system to which the new generator project will be added.

Scope of System Impact Study

The power flow studies were performed by MID with and without MEGS for 2005 and 2006 heavy summer peak cases. The studies included normal system conditions and a selected list of relevant single outages to identify thermal overloads and congestion. A transient stability analysis was performed with and without the MEGS for 2006. The short-circuit analysis was also performed by the MID (MID 2003a, pages 5-5, 5-6).

Staff reviewed the MID 2006 heavy summer peak case and observed some needed changes in the modeling parameters. Staff modified the impedance of the two EAEC-Westley 230 kV lines to reflect the proposed EAEC project and absence of that project. Also, staff modified the zone numbers of the generating buses used to summarize the MID, TID and Western generation, loads, imports and tie lines. After modifying the MID base case, staff performed power flow studies under normal and contingency conditions.

System Impact Study Results

A system impact study (SIS) was performed by the MID (MID 2003a, pages 5-5, 5-6, Appendices 5A, 5B and 5C; MID 2003n, Data Response, Set 1; MID 2003aa, Data Response Set 2; and MID 2003gg, Data Response) with the 2005 and 2006 heavy summer cases.

The ***findings*** of the SIS performed by MID were:

Load Flow Study:

(a) The study was conducted with 2005 and 2006 heavy summer cases without and with the new MEGS generation project. The 2006 heavy summer case was considered the most critical for the system. Therefore, the analysis focuses on the 2006 case. Under the normal conditions (N-0), with the East Altamont Energy Center (EAEC) generating plant at its full capacity, the Tracy–Tesla D 230 kV line loading increased from 132.2%[1] to 135.7%, an increase of 3.5 % with addition of the MEGS. Without the EAEC generation, the line loading is at 47.6% without the MEGS and at 51.1% with the MEGS, an increase of 3.5%, but resulting in no overload (MID 2003gg, Data Response).

[1] This line loading of 132.2% indicates that the line is loaded 32.2% above its capability.

(b) Under contingency (N-1) conditions, the Tracy-Tesla D 230 kV lines loading increased from 104% to 107%, an increase of 3%, with addition of the MEGS (MID 2003aa, Data Response, Set 2). The EAEC1-Tracy 230 kV line loading increased from 104% to 108%, an increase of 4% when the EAEC2-Tracy is out with addition of the MEGS project (MID 2003gg, Data Response).

Transient Stability Study:

The MID conducted a double line outage (N-2), transient stability analysis. The study shows that the addition of the MEGS generation would not degrade system transient stability performance, nor would it contribute to system instability (MID 2003a, pages 5-5).

Short Circuit Study:

The Short Circuit study indicated that with the addition of the MEGS, the available fault current will increase and the interrupting rating of the circuit breakers in substations Finney 6012, Standiford 6653, 6655 and 6658; and Enslen 6612, 6614, 6617, and 6619, will be exceeded by more than 10% (MID 2003a, pages 5-5). The MID would need to replace these eight 69 kV breakers with a higher rating to withstand the increased fault current.

A Load Flow Study to identify thermal impacts was performed by staff using a modified 2006 basecase. **The modifications made by staff were:**

1. Modification of the impedance of the two EAEC-Westley 230 kV lines to reflect the proposed EAEC project and absence of that project.

2. Modification of the zone numbers of the generating buses used to summarize the MID, TID and Western generation, loads, imports and tie lines.

The following ***findings*** of the Load Flow Study performed by staff are consistent with the MID study.

Load Flow Study:

(a) Under normal conditions (N-0), with the EAEC generating at its full capacity, the Tracy-Tesla D 230 kV line loading increased from 128% to 132%, an increase of 4%, with the addition of the MEGS project. Without the EAEC generation, the Tracy-Tesla D 230 kV line loading would be 45% before the addition of the MEGS project and at 49% after the addition of the MEGS project, an increase of 4%, but resulting in no overload.

(b) Under contingency (N-1) conditions, the Tracy-Tesla D 230 kV line loading increased from 125% to 128%, an increase of 3%, with addition of the MEGS project. The EAEC1-Tracy 230 kV line loading increased from 96% to 101%, an increase of 5% when the EAEC2-Tracy 230 kV line is out of service upon addition of the MEGS project.

(c) In the case without the EAEC generation, the addition of the MEGS project would not cause any criteria violations to the transmission system. The incremental overloads, with the EAEC generation, if they occur, can be mitigated by congestion management, SPS, or operation procedures.

Staff did not conduct Transient Stability and Short Circuit studies. Staff concurred with the MID study that the addition of the MEGS generation would not degrade system transient stability performance, nor would it contribute to system instability. Staff also found that the MEGS project would help stabilize the MID transmission system under a Parker MID-Walnut and Parker MID-Westley 230 kV double-circuit line (N-2) outage. Staff also concurred with the MID study that MID would need to replace eight 69 kV breakers mentioned above with a higher rating to withstand the increased fault current.

TRANSMISSION ALTERNATIVES

TRANSMISSION LINE ALTERNATIVES

No transmission interconnection alternatives were presented.

DOWNSTREAM IMPACTS

The Short Circuit study indicates eight breakers in the Standiford, Finney, and Enslen substations would exceed their interrupting rating after addition of the MEGS project. These breakers need be replaced before the MEGS project begins operation to meet system reliability standards. All work would be done “within the fence lines” of the existing substations and would not cause significant environmental impacts.

Although MID has not selected any specific mitigation measures for the overloaded lines identified in their studies, the marginal incremental adverse impacts found in the Western and the Cal-ISO grids can be mitigated effectively by congestion management, SPS, or operation procedures which are standard accepted practices in the utility industry. No new or modified transmission facilities --given the small incremental increase in thermal overloads --are a reasonably foreseeable consequence of the MEGS. If the EAEC project proceeds, MID should coordinate with Western, PG&E, and the Cal-ISO to identify mitigation measures should they be needed.

CUMULATIVE IMPACTS

Since the MEGS project would be located in the load center of the MID system and all the proposed facilities will be located within the existing fence lines, the project will minimize potential cumulative impacts.

RESPONSES TO PUBLIC COMMENTS ON THE EXEMPTION

Staff is not aware of any public comments regarding Transmission System Engineering.

CONCLUSIONS AND RECOMMENDATIONS

1. Staff’s analysis and findings indicate that there are no significant unmitigated adverse reliability impacts due to the MEGS project. The marginal adverse incremental impacts found in the Western and Cal-ISO grids can be mitigated effectively by congestion management, SPS, or operation procedures.

2. The MID system is short of local generation and reactive power, and its import capability is also limited. The addition of the MEGS project will significantly improve the reliability performance of the MID system to meet NERC planning standards and WSCC reliability criteria and reduce import requirements. More reactive power will be available and voltage profile will improve.

REFERENCES

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MID2003n - CH2MHILL/Carrier (tn:28902). Data Response, Set 1-CD ROM, TSE-76, Contingency Lists and Power Flow Diagrams for MEGS. Submitted to CEC/Reede/Dockets on 6/6/03.

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MID2003gg – (tn:29199). MID Electric Generation Station (MEGS) Project (03-SPPE-1_ Data Requests – TSE-Laiping Ng. Submitted to Dockets on 7/14/03.

NERC (North American Electric Reliability Council). 1998. NERC Planning Standards, September 1997.

WSCC (Western Systems Coordinating Council) 1997. Reliability Criteria, August 1998.

VISUAL RESOURCES

Testimony of Eric Knight

INTRODUCTION

Visual resources are the natural and man-made features of the environment that can be viewed. This analysis focuses on whether construction and operation of the MID Electric Generating Station (MEGS) Project would cause visual impacts and whether the project would be in compliance with applicable laws, ordinances, regulations, and standards. The determination of the potential for visual impacts resulting from the proposed project is required by the California Environmental Quality Act.

ORGANIZATION OF ANALYSIS

This analysis is organized as follows:

- description of analysis methodology;
- description of applicable laws, ordinances, regulations, and standards (LORS);
- description of the project aspects that may have the potential for significant visual impacts;
- assessment of the visual setting of the proposed power plant site and linear facility routes;
- evaluation of the visual impacts of the proposed project on the existing setting;
- evaluation of compliance of the project with applicable LORS;
- identification of measures needed to mitigate any potential significant adverse impacts of the proposed project and/or to achieve compliance with applicable LORS; and
- conclusions and recommendations.

ANALYSIS METHODOLOGY

Visual resources analysis has an inherently subjective aspect. However, the use of generally accepted criteria for determining impact significance and a clearly described analytical approach aid in developing an analysis that can be readily understood.

Significance Criteria

Energy Commission staff considered the following criteria in determining whether a visual impact would be significant.

State

The CEQA Guidelines define a “significant effect” on the environment to mean a “substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including...objects of historic or aesthetic significance” (Cal. Code Regs., tit.14, § 15382).

Appendix G of the CEQA Guidelines, under Aesthetics, lists the following four questions to be addressed regarding whether the potential impacts of a project are significant.

1. Would the project have a substantial adverse effect on a scenic vista?
2. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?
3. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?
4. Would the project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

Local

Energy Commission staff considers any local goals, policies, or designations regarding visual resources. Conflicts with such LORS can constitute significant visual impacts. See the section below titled Laws, Ordinances, Regulations, and Standards.

Impact Duration

The visual analysis typically distinguishes three different impact durations. **Temporary impacts** typically last no longer than two years. **Short-term impacts** generally last no longer than five years. **Long-term impacts** are impacts with a duration greater than five years.

View Areas and Key Observation Points

The proposed project would be visible from several areas surrounding the project site. Energy Commission staff evaluated the visual impact of the project from each of these areas. Staff uses Key Observation Points[1], or KOPs, as representative locations from which to conduct detailed analyses of the proposed project and to obtain existing condition photographs and prepare visual simulations. KOPs are selected to be representative of the most critical locations from which the project would be seen. However, KOPs are not the only locations that staff considered in each view area. Prior to the filing of the Application for a Small Power Plant Exemption (SPPE), staff visited the project area with consultants to Modesto Irrigation District (MID or applicant) for the purpose of selecting the KOPs. Staff believes that the KOPs presented in the SPPE are appropriate for this analysis.

Evaluation Process

For each view area, staff considered the existing visual setting and the visual changes that the project would cause to determine impact significance.

Elements of the Visual Setting

To assess the existing visual setting, staff considered the following elements.

[1] The use of KOPs or similar view locations is common in visual resource analysis. The U.S. Bureau of Land Management (USDI BLM 1986a, 1986b, 1984) and the U.S. Forest Service (USDA Forest Service 1995) use such an approach.

Visual Quality

Visual quality is an expression of the visual impression or appeal of a given landscape and the associated public value attributed to the visual resource. This analysis used an approach that considers visual quality as ranging from outstanding to low (see **Visual Resources Table 1**). Outstanding visual quality is a rating reserved for landscapes that would be what a viewer might think of as "picture postcard" landscapes. Low visual quality describes landscapes that are often dominated by visually discordant human alterations, and do not provide views that people would find inviting or interesting (Buhyoff et al., 1994).

Viewer Concern/Expectation

Viewer concern is a measurement of the level of viewer interest regarding the visual resources in an area. Viewer expectation is the character and quality of a view that viewers expect. One basis for that expectation by individual members of the public is their personal familiarity with the resource. Official statements of public values and goals, such as formal designation of an area or travel corridor as scenic, typically formalize the widely recognized visual value of that resource, and the public's desire to protect that value. Where such official statements exist, the general public expectation is that the visual quality and character of that resource will be preserved. Such official statements also create similar expectations in members of the public who were not previously aware of the value of the resource.

This analysis also employed land use as an indicator of viewer concern. Uses associated with 1) designated parks, monuments, and wilderness areas, 2) scenic highways and corridors, 3) recreational areas, and 4) residential areas are generally considered to have high viewer concern. However, existing discordant elements in the landscape may temper viewer concern. Travelers on other highways and roads, including those in agricultural areas, are generally considered to have moderate viewer concern, but viewer expectation and the level of concern may be lower if the existing landscape contains substantial discordant elements. However, in some situations an area of lower visual quality and degraded visual character contains particular views or visual features that are of substantially higher visual quality or interest to the public. Viewers may have a high degree of concern about potential degradation of the visual quality and character of that view or feature. Commercial uses, including business parks, typically have low-to-moderate viewer concern, though some commercial developments have specific requirements related to visual quality, with respect to landscaping, building height limitations, building design, and prohibition of above-ground utility lines, which indicate a higher level of viewer concern. Industrial uses typically have the lowest viewer concern because workers are focused on their work, and generally are working in surroundings with relatively low visual value.

Visual Resources Table 1
Landscape Visual Quality Ratings

Visual Quality Rating	Description
Outstanding	A rating reserved for landscapes with exceptionally high visual quality. These landscapes will be significant regionally and/or nationally. They usually contain exceptional natural or cultural features that contribute to this rating. They will be what we think of as "picture post card" landscapes. People will be attracted to these landscapes to be able to view them.
High	Landscapes that have high-quality scenic value. This may be due to cultural or natural features contained in the landscape or to the arrangement of spaces contained in the landscape that causes the landscape to be visually interesting or a particularly comfortable place for people. These are often landscapes that have high potential for recreational activities or in which the visual experience is important.
Moderately High	Landscapes that have above average scenic value but are not of high scenic value. The scenic value of these landscapes may be due to man-made or natural features contained in the landscape, to the arrangement of spaces in the landscape, or to the two-dimensional attributes of the landscape.
Moderate	Landscapes that have average scenic value. They usually lack significant man-made or natural features. Their scenic value is primarily a result of the arrangement of spaces contained in the landscape and the two-dimensional visual attributes of the landscape.
Moderately Low	Landscapes that have below average scenic value but not low scenic value. They may contain visually discordant man-made alterations, but the landscape is not dominated by these features. They often lack spaces that people will perceive as inviting and provide little interest in terms of two-dimensional visual attributes of the landscape.
Low	Landscapes with low scenic value. The landscape is often dominated by visually discordant man-made alterations; or they are landscapes that do not include places that people will find inviting and lack interest in terms of two-dimensional visual attributes.

Rating scale based on Buhyoff et al., 1994

Viewer Exposure

The visibility of a landscape feature, the number of viewers, and the duration of the view all affect the exposure of viewers to a given landscape feature. Visibility is highly dependent on screening, viewing distance to the landscape feature, and angle of view. The smaller the degree of screening and/or the closer the feature is to the center of the view area, the greater its visibility. Increasing distance reduces visibility. Viewer exposure can range from low values for all factors, such as a partially obscured and brief background view for a few motorists, to high values for all factors, such as an unobstructed foreground view from a large number of residences.

Visual Sensitivity

The overall level of sensitivity of a view area to impacts due to visual change is a function of visual quality, viewer concern, and viewer exposure and can range from low to high.

Types of Visual Change

To assess the visual changes that the project would cause, staff considered the following factors.

Contrast

Visual contrast describes the degree to which a project's visual characteristics or elements (consisting of form, line, color, and texture) differ from the same visual elements established in the existing landscape. The degree of contrast can range from low to high. The presence of forms, lines, colors, and textures in the landscape similar to those of a proposed project indicates a landscape more capable of accepting those project characteristics than a landscape where those elements are absent. This ability to accept alteration is often referred to as visual absorption capability and typically is inversely proportional to visual contrast. Texture is usually an important factor only from foreground distances from which it can be discerned.

Dominance

Another measure of visual change is project dominance. Dominance is a measure of a) the proportion of the total field of view that the feature occupies; 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 that focuses the view on the feature. A feature's level of dominance is higher if it is near the center of the view, is elevated relative to the viewer, or is backdropped by sky. As the distance between a viewer and a feature increases, its apparent size decreases and thus its dominance decreases. The level of dominance can range from subordinate (low) to dominant (high).

View Disruption

View disruption describes the extent to which any previously visible landscape features are blocked from view or the continuity of the view is interrupted. View disruption of higher quality landscape features by lower quality project features causes adverse visual impacts. The degree of view disruption can range from none to high.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

FEDERAL

The proposed project is not located on federally administered public lands and therefore is not subject to federal regulations pertaining to visual resources.

STATE

The proposed project site is approximately 0.4 mile west of State Route (SR) 99. Although the upper portions of the project may be very briefly visible to northbound motorists, SR 99 is neither an eligible or officially designated State Scenic Highway (Caltrans 2003). Therefore, no state regulations pertaining to scenic resources are relevant to the project.

LOCAL

The proposed power plant, electrical transmission line, and water and gas supply pipelines would be located in the City of Ripon. Therefore, the project would be subject to local LORS pertaining to the protection and maintenance of visual resources, which are found in the City of Ripon General Plan and Development Code. A list of the

relevant policies and regulations is presented below. An assessment of the MEGS Project's consistency with these policies and regulations is presented in a later section of this analysis.

City Of Ripon General Plan

The City's General Plan includes one visual resource policy that is relevant to the project, as follows:

Circulation and Transportation Policy A4: The City will consider visual aesthetics and safety aspects in future developments, including landscaping requirements and setback requirements (City of Ripon 1998, p. 3-2).

City of Ripon Development Code (Title 16)

The City's Development Code sections listed below are relevant to the visual resources analysis of the MEGS Project (City of Ripon 2002).

Chapter 16.24: Industrial Districts

Section 16.24.010: Purpose

E. Promote high standards of site planning, and landscape design for industrial developments within the City.

Section 16.24.030: Development Standards for Industrial Districts.

A. Trash Enclosures. Fully enclosed trash collection areas must be provided at locations that are readily accessible to occupants and sanitation collectors.

B. Landscaping. A minimum of ten (10%) percent of a building site must be landscaped. A landscape plan for all uses showing plant species, initial size, location, method of irrigation, and growth characteristics consistent with any adopted standard details must be approved by City Staff before issuance of any permits. The required landscaping must be installed before final inspection and must be maintained by the property owner.

L. Site Plan Permit. A development plan review is required for all new projects and any project that includes expanding an existing use.

M. Lot and Structure Standards. Unless otherwise specified, lots and structures shall comply with the provisions in Table 16.24.2.

Q. Maximum Structure Heights. The maximum structure heights set forth in this subsection Q apply only to habitable areas (defined as those areas which are accessible to people) of industrial buildings. In the M-2 (Heavy Industrial) districts, maximum height shall not exceed 35 feet or 2 stories whichever is higher. Structures not to exceed 4 stories or 65 feet, whichever is higher, may be constructed provided a Use Permit is obtained. Structures which are over two (2) stories shall be located no closer than 1,000 feet to a residential district.

Table 16.24.2: Industrial Lot and Structure Standards (M-2 Districts).

Height: 35 feet or 2 stories (Structures up to 4 stories or 65 feet, whichever is higher, may be constructed with a use permit. Any structures over 2 stories shall be located no closer than 1,000 feet to a residential district.)

Front yard setback: 15 feet
Rear yard setback: 20 feet
Interior side setback: 20 feet
Street side setback: 10 feet
Landscaped lot area: 10 percent
Building coverage maximum percent: 50 percent

Chapter 16.72: Site Plan Permit Review

Section 16.72.010: Purpose

It is the purpose of this Chapter to provide a method for reviewing proposed uses that possess characteristics that require a special appraisal to determine if the uses have the potential to affect adversely other land uses, transportation, or facilities in the vicinity. The Review Authority may require conditions of approval necessary to eliminate or reduce to an acceptable level, any potentially adverse effects of a use.

Section 16.72.020: Requirements for Application

A. Applications for a site plan permit may be initiated by the property owner(s) or the property owner's authorized agent. Applications are filed with the Planning Department. A request for a site plan review must include a site plan that clearly describes the location and characteristics of the proposed use.

C. Before application, the applicant should request a preapplication conference with the Planning Department.

Section 16.72.030: Review Procedures

The Review Procedure for a site plan permit application is review by Director of Building and Planning for minor site plan permits, and Planning Commission review for major site plan permits.

Section 16.72.040: Development Requirements

Site plans approved under the provisions of this Chapter shall be subject to those conditions that ensure that the proposed use meets the minimum requirements of the City. Unless otherwise specified the use cannot be established until all conditions have been fulfilled.

Section 16.72.070: Findings

Before approving an application for a site plan permit, the review authority shall find that:

A. Consistency. The proposed use is consistent with the goals, policies, standards, and maps of the General Plan, any applicable Master Plan, Specific Plan, and Special Purpose Plan, and any other applicable plan adopted by the City.

Chapter 16.144: Parking and Loading

Section 16.144.040: Location of Required Parking Spaces

C. Not within specified Yards. Parking spaces required for dwellings are not to be located within any required front or side yards.

Section 16.144.050: Design of Parking Areas.

Design standards are established for the development of off-street parking facilities as follows:

E. Surfacing. All parking spaces, driveways and maneuvering areas shall be surfaced and permanently maintained with base material and asphalt concrete, meeting City of Ripon off street parking standards, to provide a durable dust free surface.

F. Landscaping and Screening. All parking areas shall be landscaped or screened according to the standards set forth in this Code.

G. Lighting. All off-street parking areas shall have provisions for exterior lighting.

Chapter 16.148: Landscaping and Irrigation.

Section 16.148.030: Basic Requirements.

Minimum site landscaping and required planting areas must be installed in accordance with the standards and requirements of this section that apply to all projects that require a permit.

A. Preparation of Plans. Landscape plans must be prepared by a landscape designer, a licensed landscape architect or other qualified person. The Planning Director and the Public Works Director may accept plans from an applicant if the plans meet the requirements of this Chapter.

B. Timing of Installation. Required landscaping and irrigation systems must be completely installed prior to the use of the property and the issuance of the Certificate of Occupancy for a new structure.

Section 16.148.040: Standards for Landscaping and Irrigation.

A. Maintenance. Required planting areas must be permanently maintained. Maintained includes: watering, weeding, pruning, insect control, and replacement of plant materials and irrigation equipment, as needed, to preserve the health and appearance of plant materials.

B. Safety. Landscape materials shall not be located such that, at maturity: they interfere with safe sight distances for vehicular, bicycle, or pedestrian traffic; they conflict with

overhead utility lines, overhead lights, or walkway lights; or they block pedestrian or bicycle ways.

C. Landscaping Plans Required. Each application for a permit must include plans and written material describing all existing trees, including species, height, diameter, and condition, and showing how any applicable site landscaping or planting area requirements are to be met. The degree of specificity of such plans and written material must relate to the permit or request for approval being requested.

D. Water Efficient Landscape. All new landscaping must be planned to create a water efficient landscape in accordance with the provisions of Chapter 13.06.

1. Plant materials must be selected for: energy efficiency and drought tolerance; adaptability and relationship to the Ripon environment; color, form, pattern; ability to provide shade; soil retention; and fire resistiveness.

2. The overall landscape plan must be integrated with all elements of the project, such as buildings, parking lots and streets, to achieve a desirable microclimate and minimize energy demand.

E. Plant Selection. Plants must be healthy and meet minimum industry standards. Native plants, particularly trees and shrubs, must be considered as the first alternative when selecting plants.

F. Irrigation Plans. Irrigation plans must be submitted with applications for building permits and for approval of improvement plans required by this Code, and shall contain all construction details for an automatic system including, but not limited to, the following:

1. Location, type, and size of lines;
2. Location, type, and gallonage of output of heads and/or emitters;
3. Location and sizes of valves;
4. Location and type of controller;
5. Installation details;
6. Location and type of backflow prevention device;
7. Available water pressure and water meter outlet size;
8. Irrigation application schedule and flow rates.

Section 16.148.050: Requirements for Parking Areas.

The following requirements apply to all open, off-street parking areas and off-street loading areas, including nonresidential driveways:

B. One tree shall be required for each 5 parking stalls, or portion thereof, and shall be evenly spaced throughout the parking lot.

D. Planters that abut parking stalls must be a minimum of 5 feet wide. A minimum 18-inch-wide paved strip shall be added to the adjacent parking stall to allow access to and from vehicles.

Section 16.148.080: Requirements for Industrial Districts.

A. All areas not used for buildings, parking, walkways, driveways, or other permanent facilities must be landscaped.

B. A minimum ten (10) foot wide planting strip shall be required along adjacent streets. The strip must be continuous except where crossed by driveways and walkways.

Chapter 16.152: Fencing and Screening

Section 16.152.030: Fencing Standards

Unless otherwise specified, fencing will be permitted, but not required, and shall comply with the provisions of this Section.

A. Fencing Materials. Fencing materials of corrugated plastic, corrugated iron, steel, aluminum, or asbestos, excluding chain link fencing, are specifically prohibited. Unless otherwise specified, barbed wire fence is prohibited.

E. Special Fencing Requirements for Industrial Projects.

1. Fencing of Front Yards. A fence up to 6 feet may be permitted in the required front yard provided such fencing is constructed of woven wire, wrought iron, or similar transparent material, and does not obstruct vehicular site distance.
2. Security Fencing. Barbed wire security fencing not to exceed 2 feet in height may be erected on top of required or permitted fencing, except for fencing adjacent to planned or existing residential areas. Electrical fencing adjacent to planned or existing residential areas is prohibited.

Section 152.040: Screening Standards.

Screening may be used in any zone, provided a safe sight distance is maintained. All screening required by this Chapter shall comply with the provisions of this Section.

A. Materials. Screening shall include the installation and maintenance of one, or a combination, of the following elements: plant materials; fencing; walls; or berms.

B. Screening Materials. Screening materials of corrugated plastic or iron, steel, aluminum, asbestos, wood (excluding wood in combination with masonry), or security chain-link fencing are specifically prohibited. Security chain-link fencing may be permitted for commercial and industrial projects if combined with landscaping acceptable to the Review Authority. Unless otherwise specified, barbed wire and slats are not permitted.

C. Density. When plant materials are used for screening, they must be planted in such quantity and location as to achieve an effective visual screen within three years of installation. If a hedge fails to retain such density any time after this three year period, it must be supplemented or replaced with other dense landscaping or an appropriate fence or wall.

E. Special Screening Requirements for Industrial Projects. The following requirements apply to all industrial projects.

2. Screening of Storage Areas. Storage areas shall be screened as follows:
   a. Unless otherwise specified, all storage materials and related activities, including storage areas for trash, must be screened so as not to be visible from adjacent properties and public rights-of-way. Screening must be 6 to 8 feet in height. Items stored within 100 feet of a dedicated street or residential zone cannot be stacked higher than two feet above the adjacent screen.
   b. Screening shall not be required for a storage area that abuts an existing industrial use or property designed on the General Plan Map for industrial use, provided the storage area is not adjacent to an existing residential use or property designated on the General Plan Map for residential use or a public street.

F. Exterior Lighting Structures. All exterior electrical cage enclosures and storage tanks must be screened from view from access or adjacent streets and residential neighborhoods.
   1. Screening of Roof Equipment. Except in the Industrial Heavy (M-2) District, all roof-mounted mechanical equipment, tanks, ventilating fans, or similar equipment must be visually screened from view from adjacent properties and public rights-of-way. Screening shall not exceed a height of 6 feet from roof level. Required screens shall be architecturally compatible with the building or structure on which they occur.
   2. Exceptions to Height Requirements. The requirements of this Chapter do not apply to uses permitted in any industrial zone which are required to maintain visual screens to a height greater than specified in this Development Code.

G. Maintenance. All required screening materials must be maintained in good condition by the property owner, and whenever necessary, repaired or replaced.

Chapter 16.156: Performance Standards

Section 16.156.080: Light and Glare.

Exterior lighting must be energy efficient and shielded or recessed so that direct glare and reflections are contained within the boundaries of the parcel, and must be directed downward and away from adjoining properties and public rights-of-way. No lighting shall blink, flash, or be unusually high intensity or brightness. All lighting fixtures shall be appropriate in scale, intensity, and height to the use it is serving. Security lighting must be provided at all entrances and exits. No use shall cause a glare on lots developed residentially, zoned for residential use, or shown as residential on the General Plan, or cause glare on a street or alley.

Chapter 16.168: Mitigation Monitoring and Reporting

Section 16.168.010: Purpose

The purpose of this Chapter is to provide a process to assure adequate monitoring and reporting of all measures required to mitigate potential impacts from discretionary projects, as required by Section 21081.6 of the California Public Resources Code.

Section 16.168.020: Monitoring and Reporting Plan

The Review Authority shall adopt a Monitoring and Reporting Plan for discretionary projects that are approved subject to conditions or changes which are deemed necessary by the Review Authority to reduce potentially significant environmental impacts below a level of significance.

C. The method of monitoring and reporting on the required mitigation measures include:
   1. The department, division, agency, firm, or individuals responsible for conducting or overseeing the monitoring and reporting function;
   2. An identification of the date or other appropriate time period for implementing each mitigation measure;
   3. An identification of the frequency of inspection and the duration of the required monitoring and reporting.

Section 16.168.030: Responsibilities of Director

The Director is responsible for assuring the preparation and implementation of the Monitoring and Reporting Plan.

A. The Director may request, and shall receive, assistance from other City departments in implementing the Monitoring and Reporting Plan.

B. The Director may delegate specific responsibilities for monitoring or reporting to project applicants or qualified consultants.

Chapter 16.172: Signs

Section 16.172.050: Regulations for Zones.

Industrial Districts or Industrial Use in the Mixed Use District (M1, M2, MU).

1. Each lot shall be permitted one freestanding sign for each street frontage, for identification.
   a. The sign may be double-faced.
   b. The sign area shall not exceed 72 square feet per face.
   c. The sign may be illuminated.

2. Each lot of one acre or more in size shall be permitted one monument sign, and it may be used in conjunction with a freestanding sign for identification. On lots of less than one acre in size, a monument sign may be used as an alternate to the freestanding sign.
   a. The sign may be double-faced.
   b. Sign area shall not exceed 30 square feet per face.
   c. The sign shall not exceed 5 feet in height above the adjacent pavement surface.

d. The sign shall not be placed closer than 100 feet to any freestanding sign on the same, or any adjacent site.

e. The sign shall be no closer than 25 feet from a driveway which intersects the public right-of-way, or any sidewalks, driveways, etc., on the same, or any adjacent site.

f. The sign may be illuminated.

3. Each lot shall be permitted one wall sign for each street frontage.

   a. Sign area shall not exceed 20 percent of the building facade on which it is attached.

   b. The sign may be illuminated.

4. Multi-occupant complexes shall be permitted one freestanding sign for each street frontage for complex/occupant identification, and may list the name(s) of the complex and the occupant(s).

   a. The sign may be double-faced.

   b. Sign area shall not exceed 72 square feet per face.

   c. The sign may be illuminated.

5. Except where otherwise provided for in this Chapter, freestanding signs in any industrial zone shall be placed in landscaped areas, and shall not exceed 20 feet in height above the adjacent pavement surface.

SETTING

EXISTING LANDSCAPE

The MEGS site and linear facility routes are located in the City of Ripon, which is located in San Joaquin County. The power plant site is located in the south-central portion of the City within an area of flat, nearly level terrain. The area surrounding the MEGS site contains a mixture of residential, commercial, and industrial uses. Undeveloped parcels planned for industrial uses are located to the west and south of the project site. The Stanislaus River and riparian vegetation are located to the east and south. The routes of the gas pipeline and electrical transmission line are industrial in character.

VIEWING AREAS AND KEY OBSERVATION POINTS

Visual Resources Figure 1 (all of the visual resources figures are presented at the end of this analysis) shows the areas from which the project would be visible (project viewshed) and the location and view direction of the two key observation points (KOPs) selected to represent two sensitive viewing areas that would be most impacted by the proposed project. These KOPs are as follows:

- KOP 1 – Intersection of Vera Avenue and Sixth Street
- KOP 2 – City of Ripon Veterans Park

KOP 1 – Intersection of Vera Avenue and Sixth Street

KOP 1 is located at the corner of Vera Avenue and Sixth Street, approximately 0.35 mile west of the project site. The KOP was selected to represent the view of the MEGS site that is available to residences on Vera Avenue, Sixth Street, Seventh Street, and Robert Avenue. It is estimated that there are approximately 53 residences in the area of KOP 1 that potentially have views of the site from at least the front yards of the residences (MID2003a, page 8.11-10). **Visual Resources Figure 2A** shows the current view from KOP 1 to the east in the direction of the MEGS site. In addition to the residences at KOP 1, there are approximately four residences located at the southern end of Palm Avenue, approximately 0.25-mile west of the MEGS site that have views of the site from at least somewhere on their property. One of these residences has a direct view of the MEGS site from the windows of the residence. There are two residences on Acacia Avenue that may have views of the upper portions of the project structures that would extend above the intervening existing industrial structures and truck storage areas.

Visual Quality

From KOP 1, the most prominent features in the existing landscape are the flat, undeveloped fields west of the MEGS site (seasonally covered with grass as shown in Figure 2A and periodically disked), a 499-foot wireless cable tower, a grove of coast redwood trees at the Fox River Paper Company to the east of the project site, and riparian trees along the Stanislaus River south of the site. Industrial buildings, such as Nulaid Foods Inc., are visible from this viewing area to the north of the MEGS site. The upper portions of the Fox River Paper Company and the Ripon Cogeneration Inc. facilities are visible between the redwood trees. These two facilities emit water vapor plumes. Although the trees in the background are a high quality feature that provide visual interest to a view otherwise lacking in notable scenic qualities, the view from KOP 1 is considered to have moderately low visual quality overall because the view is dominated by a field that is only seasonally covered in grass and contains industrial structures with low visual quality.

Viewer Concern

Residential viewers are typically considered to be highly sensitive to visual changes. The coast redwood trees at the Fox River Paper Company and the riparian trees along the Stanislaus River provide the only notable scenic qualities to the view in the direction of the MEGS site from KOP 1. The blockage of the trees would be perceived by residents at this viewing area to be an adverse visual change. Viewer concern is rated high at KOP 1.

Viewer Exposure

The MEGS site is potentially visible from the front yards of approximately 53 residences in the area of KOP 1. Viewer exposure varies within the viewing area. There are approximately six to seven homes on Vera Avenue that have the most direct view of the MEGS site. These residences face to the east and are located approximately 0.35 mile from the site. The view from the Vera Avenue residences is the view that is depicted in **Visual Resources Figure 2A**. The view from these residences is unobstructed because the intervening fields are currently undeveloped and covered only with low-

lying vegetation. The houses on Sixth and Seventh Streets face north/south, so their visibility of the site is less than that of the Vera Avenue residences. Except for the residences closest to Vera Avenue, views of the site from the windows of the Sixth and Seventh Street residences would not be possible given their orientation. Furthermore, trees and shrubs in the front yards of many of these residences would block the view east down Sixth and Seventh Streets toward the MEGS site. Also, except for the houses immediately west of Vera Avenue, the residences on Sixth and Seventh Streets are located farther away from the site, such as those at Robert Avenue which are approximately 0.5 mile from the site. Because the viewers at KOP 1 are people who reside in the area and could potentially view the project throughout the day, view duration is considered high. Overall, viewer exposure is rated moderate at KOP 1.

Overall Visual Sensitivity

For residents at KOP 1, the low to moderate visual quality, high viewer concern, and moderate viewer exposure result in an overall visual sensitivity rating of moderate.

KOP 2 – City of Ripon Veterans Park

KOP 2 is located within Veterans Park, which is located at the corner of Locust Avenue and 4th Street. The viewpoint is located on the south-facing bleacher at Baseball Field #1, approximately 0.26 mile north of the MEGS site. KOP 2 was selected to represent the view in the direction of the project site that is available to people sitting on the bleacher while watching a baseball game. The bleacher is estimated to hold between 50 and 100 people (MID2003a, page 8.11-11). Other viewers in the area of KOP 2 would be people playing tennis in the four courts along Locust Avenue; people playing or watching a baseball game at the park's other two fields; and people visiting the park community building. There are approximately three to four residences located along Fourth Street opposite Field #1 that would have views of the upper portions of the project structures somewhat similar to the view from KOP 2. In addition to these residences, the southern most residences (approximately three) on Locust Avenue before the street becomes industrial may have views of the upper portions of the MEGS project not blocked by intervening industrial structures. The visual quality of the view toward the MEGS site from these residences is low due to the existing industrial facilities.

Visual Quality

From the viewpoint, the most prominent features in the existing landscape are the cyclone fence, which protects spectators from foul balls, and the baseball field. Other landscape features visible to people sitting on the bleachers are the tennis courts and the industrial buildings south of the park. The aforementioned industrial buildings, as well as a truck storage yard, are more visible to people using the tennis courts and the other two baseball fields than at KOP 2. The only landscape features of notable scenic quality are the trees on the south and west perimeters of the park. The visual quality of the view toward the MEGS site from the area of KOP 2 is considered to be low to moderately low overall.

Viewer Concern

Viewers within a recreational area are typically considered to be highly sensitive to visual changes that could adversely affect their experience of the area's visual resources. However, the high viewer concern often associated with parks is tempered in this case because the attention of viewers at Veterans Park is primarily focused on watching a baseball game or participating in a sporting activity. Viewers at Veterans Park are accustomed to seeing industrial uses in the areas south and east of the park. These modulating elements cause viewer concern at KOP 2 to be moderate.

Viewer Exposure

The MEGS site is not visible from KOP 2 due to intervening industrial structures. However, the upper portions of the MEGS Project structures would be visible to park visitors. Visibility is rated moderate. During staff's three visits to the park very few people were using the park. However, the potential number of viewers is high, considering that there are three baseball fields, four tennis courts, and two parking lots that can accommodate approximately 100 vehicles. Spectators and participants could potentially be at the park for several hours while a baseball game is being played. Duration of view is considered moderate. Overall viewer exposure is considered moderate due to the moderate visibility and duration of view, and the periodically high number of viewers.

Overall Visual Sensitivity

For recreational users at KOP 2, the low to moderate visual quality and the moderate viewer concern and viewer exposure result in an overall visual sensitivity rating of moderately low.

IMPACTS

ENVIRONMENTAL CHECKLIST

VISUAL RESOURCES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Have a substantial adverse effect on a scenic vista?				X
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?			X	
c) Substantially degrade the existing visual character or quality of the site and its surroundings?		X		
d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?		X		

DISCUSSION OF IMPACTS

The following discussion explains the responses to the questions in the environmental checklist.

A. Scenic Vistas

Staff did not identify any scenic vistas within the project viewshed, nor are any identified in the City of Ripon General Plan. Thus, the project would have no impact under this criterion.

B. Scenic Resources

The MEGS site does not contain any scenic resources such as trees or rock outcroppings that could be damaged by the proposed project. Grass and weeds are the only vegetation growing on the site, and there are not any existing structures on the site. As indicated in the previous discussion of LORS, the proposed project is not within view of a State Scenic Highway. Views of oak savannah and riparian areas along the Stanislaus River are possible from the area of KOP 1. The Stanislaus River corridor is recognized in the City of Ripon General Plan, Open Space and Conservation Element, as the City's most valuable natural resource. The proposed project would not block views of the Stanislaus River riparian areas as seen from residences in the area of KOP 1. Thus, the project would have a less than significant impact under this criterion.

C. Visual Character or Quality

Project aspects that were evaluated in the assessment of Item C include project construction; the power plant structures; the electric transmission line and water and gas supply pipelines; and HRSG and cooling tower plumes.

Construction Impacts

The proposed power plant would occupy eight acres within a 12.25-acre parcel located at the intersection of Stockton Avenue and Doak Boulevard. Approximately four acres of the parcel would be used during construction for storage of equipment and materials and for parking by construction personnel. Construction of the proposed power plant would cause temporary visual impacts due to the presence of equipment, materials, and workforce. Construction would involve the use of cranes, heavy construction equipment, temporary storage and office facilities, and temporary laydown/staging areas.

A 0.25-mile-long pipeline would be constructed to deliver natural gas to the project. The pipeline would extend to the MEGS site from an existing PG&E main gas line located north of the site at South Stockton Avenue and 4th Street. Gas pipeline construction activities would be visible to the six residences and one small apartment building that are located along this portion of South Stockton Avenue. Except for these residences, the majority of the uses along South Stockton Avenue are industrial. The visual quality along the gas pipeline route is low. A typical construction spread for pipelines would include a bulldozer, backhoe, boom trucks, excavation diggers, material delivery trucks, welding trucks and inspection vehicles. Often, most major pieces of equipment used to construct pipelines would remain along the pipeline rights-of-way during construction of the lines. Typically, pipeline construction activities (from site preparation to restoration)

could potentially be viewed from any one residence for up to two weeks, with decreasing levels of visual clarity as the distance to construction activities increases.

Construction of the project is expected to last for nine months. Due to the temporary nature of project construction activities, the moderately low number of residences with unobstructed views of the MEGS site and laydown area and the 0.25-mile distance to the nearest of these residences, the low level of traffic on nearby roads, and the moderate overall visual sensitivity of the viewshed, no substantial visual degradation of the sites or their surroundings would occur. The applicant does not expect that construction of the project linear facilities, including the electric transmission line, would require the removal of ornamental trees or shrubs. After installation of the linear facilities, the areas disturbed by construction activities would be returned to their pre-construction condition, thereby minimizing the impact on the landscape (MID2003a).

The applicant is not anticipating the need for nighttime construction (MID2003l). If construction is accelerated, it is expected that additional construction personnel could be accommodated onsite during the day. In the unlikely event that nighttime construction does occur, the applicant would take measures to minimize the off-site visibility of this lighting. These measures would include using the minimal lighting required for operations and safety, and using lighting that is shielded and highly directional (MID2003l). The mitigation measures proposed by the applicant would ensure that construction lighting impacts, if they occur, are kept to less than significant levels.

Power Plant Structures

The power plant structures would include two 85-foot-tall exhaust stacks, two 43-foot-tall combustion turbine generators, and two 40-foot-tall chiller/cooling tower packages. A 10-foot-high non-reflective chain-link fence with vinyl slating and topped with one foot of barbed wire would surround the project. The MEGS Project was revised in Supplement A to the SPPE to include a zero liquid discharge (ZLD) system. Three ZLD technology options are being considered by MID (MID2003z). The primary ZLD equipment would be located in the same location on the site under all three options. Option 1 is considered the “worst case” scenario from a visual perspective because it has the tallest feature (the 70-foot-tall brine concentrator and spray dryer) compared to Option 2 and 3 where the tallest structures would be 40 feet tall. Buildings at the project site would include an approximately 26-foot tall and 130-foot long building containing a warehouse, maintenance shop, and water treatment room and an approximately 26-foot-tall and 95-foot-long electrical control and administration building.

A detailed analysis of operation impacts was conducted for the view areas represented by the two key observation points. For each KOP, an evaluation of visual contrast, project dominance, and view disruption is presented with a concluding assessment of the overall degree of visual change caused by the proposed project. The results of the operation impact analysis are discussed below by KOP. The visual impacts of night lighting and visible plumes are discussed in separate sections of this analysis.

KOP 1 – Vera Avenue at Sixth Street

Visual Contrast

Visual Resources Figure 2B presents a visual simulation of the proposed project as viewed from KOP 1 at the intersection of Vera Avenue and Sixth Street. From KOP 1, the majority of the structures with complex industrial character are obscured by the simple forms of the warehouse/maintenance shop and water treatment building and the water tanks. The simple geometric forms and straight lines of the project structures would be similar to the forms and lines of the industrial warehouse-type structures to the north of the MEGS site. Except for the exhaust and brine concentrator stacks, the horizontal form of the project structures would be consistent with the horizontal form of the undeveloped field in the foreground and horizontal band of trees in the background. Although the vertical elements of the project (stacks) would contrast with the flat, horizontal field, vertical man-made features have been established in the landscape, such as the 499-foot-tall wireless cable tower and several grain silos and a water tower, which are visible from residences farther south on Vera Avenue toward Doak Boulevard. The medium gray color depicted on the majority of the structures would contrast moderately with the seasonally changing colors of the field (green to brown) and the green trees in the background. The light gray color of the warehouse/maintenance shop structure would cause a moderate to high degree of contrast with the predominant colors of the landscape. The color of this building should be changed so that it is less obtrusive. Overall visual contrast is rated moderate.

Project Dominance

The power plant structures would appear comparable in size to the industrial buildings to the north of the MEGS site and much smaller than the wireless cable tower. The project would occupy a small portion of the panoramic landscape visible from KOP 1. The majority of the power plant structures would not extend above the tree line in the background. The exhaust and brine concentrator stacks and the cooling tower would be seen against the sky, thereby increasing the conspicuousness of the proposed project. Project dominance is rated co-dominant (moderate).

View Disruption

From KOP 1, the power plant structures would block from view about half of the coast redwoods growing at the Fox River Paper Company site. The coast redwoods and the riparian trees along the Stanislaus River are the only notable scenic qualities visible from this viewpoint. Views of riparian trees would not be affected. The severity of the view disruption is considered moderate.

Overall Visual Change

From KOP 1, the overall visual change caused by the proposed project would be moderate due to the moderate degree of contrast and view disruption that would occur from the project's co-dominant structures.

Visual Impact Significance

When considered within the context of the moderate visual sensitivity of the existing landscape and viewing characteristics, the moderate degree of visual change that would

be perceived from the area of KOP 1 would cause an adverse but less than significant visual impact.

KOP 2 – Veterans Park

Visual Contrast

Visual Resources Figure 3B presents a visual simulation of the proposed project as it would be seen from KOP 2, which is located on the south-facing bleacher at Baseball Field #1 at Veterans Park. The simple geometric forms and straight lines of the MEGS Project structures would be similar to the existing industrial warehouse-type structures that are visible from this viewpoint. The vertical elements of the project (exhaust and brine concentrator stacks) would be similar in form and line to other vertical features, such as light poles, power poles, fence posts, and the wireless cable tower. The gray color of the project structures would cause a moderately low degree of contrast with the sky and the colors of the existing industrial structures, which are painted in various colors, such as white, gray, blue, and green. Overall visual contrast is low.

Project Dominance

The MEGS Project would occupy a small portion of the panoramic landscape visible from the KOP 2 area. The project structures would be taller than the existing industrial structures in the view, but comparable in height and scale to the trees along the south perimeter of the park. The project would be much smaller than the wireless cable tower, and would appear much smaller than the fence between the bleacher and the ball field. Several of the MEGS Project structures, most notably the exhaust and brine concentrator stacks, would be seen against the sky, thereby increasing the conspicuousness of the project. Project dominance is rated co-dominant (moderate).

View Disruption

The project structures would block a very small portion of the sky. No other landscape features of high visual quality would be blocked from view. The severity of the view disruption at KOP 2 is rated low.

Overall Visual Change

From KOP 2, the overall visual change caused by the proposed project would be low to moderate due to the low degree of contrast and view disruption that would occur from the project's co-dominant structures.

Visual Impact Significance

When considered within the context of the moderately low visual sensitivity of the existing landscape and viewing characteristics, the low to moderate degree of visual change that would be perceived from the area of KOP 2 would result in a less than significant visual impact.

Electric Transmission Line

The MEGS Project would interconnect with the existing MID Stockton Substation located northeast of the site via a new 0.25-mile long double-circuit 69-kV subtransmission line. The new line would require the installation of approximately

seven wood or metal poles. The line would exit the MEGS site at the northeast corner, cross over Stockton Avenue, and then travel in an east by northeast direction along the access road to the Fox River Paper Company before entering the Stockton Substation. The area surrounding the subtransmission line route and Stockton Substation is vacant or industrial in character. There are existing power lines along the access road. The subtransmission line would not substantially degrade the existing visual quality of the area, which is rated low to moderately low. The portion of the subtransmission line as it exits the MEGS site would be visible from KOPs 1 and 2. The subtransmission poles would be similar in form, line, and scale to existing power poles or other vertical elements visible from these viewpoints, and would cause a low degree of view disruption. The resulting visual impact of the subtransmission line on the views from KOPs 1 and 2 would be less than significant.

Combustion Exhaust and Cooling Tower Plumes

The MEGS Project is proposed to be a simple cycle power plant that would include two 85-foot tall combustion exhaust stacks and two 40-foot-tall chiller/cooling tower packages. The applicant has not proposed to use any methods to abate visible plumes.

The combustion exhaust temperature ranges from 670 to 850 degrees Fahrenheit. At such high temperatures, little or no visible water vapor plumes would be expected to form above the exhaust stacks under any combination of operating and ambient conditions (Walters 2003a). Because the MEGS turbines would use water injection, there would be a minor potential for very occasional visible water vapor plumes to occur under extremely cold conditions or during turbine startup operating conditions. No significant visual impacts are anticipated due to the very low frequency of occurrence of the combustion exhaust water vapor plumes.

The primary cooling load of the MEGS cooling towers would be the inlet air chillers, which would not operate at temperatures below 55 degrees Fahrenheit. The cooling towers would have a minor secondary load of lube oil cooling. The MEGS cooling towers would be very small and their cooling load would be directly dependent on ambient temperature (i.e., the higher the temperature, the higher the cooling load), which would reduce the potential for visible water vapor plumes to form (Walters 2003c). Because of the simple cycle design of the MEGS Project and the small size and proposed operation of the cooling towers, staff did not conduct plume modeling for the project. Staff's evaluation of the MEGS cooling tower visible water vapor plumes is based on recent modeling conducted by staff for the Los Esteros Critical Energy Facility (LECEF), also a simple-cycle power plant with similarly operated cooling towers. The LECEF cooling tower load is four times the load of MEGS, and the humidity of the LECEF project area (San Jose) is much higher than it is in Ripon. Based on this comparison, staff can conclude that the cooling tower plume potential for the MEGS Project would be very low (Walters 2003a). It is likely that the frequency of the cooling tower plumes would not exceed 10 percent of seasonal daylight no rain, no fog hours, the minimum level used by staff to determine potential impact (Walters 2003b). Any plumes that would form are expected to be small. Staff estimates that the cooling tower plumes would be approximately 80 feet tall, which is about as tall as the 85-foot tall exhaust stacks. There are several other plume sources in the area, such as Nulaid Foods, Inc., Fox River Paper Company, and Ripon Cogeneration Inc. Small visible

plumes were observed emanating from the paper and cogeneration facilities during staff's site visit in June. In **Visual Resources Figure 2B** an existing water vapor plume about the same size as the MEGS Project exhaust stack is visible to the east of the MEGS site.

Under clear sky viewing conditions, the white cooling tower plumes would contrast highly with the blue sky background. The vertical and diagonal, irregular and changing form of the plume would distinguish the plume from the broad, horizontal, natural landforms and the generally uniform appearance of sky. The MEGS cooling tower plumes would appear similar in form, line, and color to the existing water vapor plumes in the vicinity of the project site. The plumes would also be similar in color to the existing white-colored industrial buildings to the north of the MEGS site, although they would contrast with the green row of trees in the background. Overall visual contrast with the existing setting is considered low to moderate.

The plumes would occupy a very small part of the overall setting. The plumes would appear to be about the same height as the nearby industrial buildings. There would typically be other industrial plumes in the vicinity occurring at the same time as the MEGS plumes, some of which may be approximately the same size as the project plumes. The dominance rating of the cooling tower plumes is rated subordinate to co-dominant.

When the plumes are present, they would block small portions of the sky. The plumes would block no other unique or notable scenic features. View disruption is considered to be low.

The overall visual change caused by the MEGS cooling tower plumes would be low to moderate due to the plumes' low to moderate degree of contrast with the existing setting, subordinate to co-dominant dominance rating, and low degree of view disruption. When considered within the context of the moderate visual sensitivity of the existing landscape and viewing characteristics, the low to moderate degree of visual change caused by the MEGS cooling tower plumes would result in an adverse but less than significant impact.

D. Light or Glare

Currently there are no sources of nighttime lighting at the MEGS site; however, there are numerous sources of nighttime lighting in the vicinity of the site that are visible from KOPs 1 and 2 (MID2003l). Industrial facilities in the vicinity of the MEGS site that are sources of existing nighttime lighting include the wireless cable tower and the City's wastewater treatment plant ponds south of the site; Nulaid Foods, Inc. and Jim Aartman Inc. to the north of the site on Locust Avenue; and the Fox River Paper Company and Ripon Cogeneration Inc. to the east of the site. Other sources of nighttime lighting include the lights at the baseball fields and tennis courts at the City of Ripon Veterans Park.

The MEGS Project would require nighttime lighting for operational safety and security. If project lighting were uncontrolled it could cause adverse visual impacts on nearby sensitive visual receptors, such as residences on Vera and Palm Avenues. MID has committed to minimizing offsite lighting impacts (MID2003a; page 8.11-14). Specifically,

MID proposes to install lights that are shielded and directed downward, and install switches on the project's tallest structures, such as the SCR duct work and combustion stacks, so that these lights would be turned off except for maintenance activities (MID2003a; MID2003l). Because of the existing character of the project area at night and MID's commitment to minimize light emissions offsite, the MEGS project would not create a substantial new source of light or glare that could adversely affect nighttime views.

The visual simulations provided in the SPPE depict a medium gray color for the majority of the project structures, except for the maintenance building, which is depicted in a light gray color. To reduce its visual contrast with the setting, staff believes that the maintenance building should also be painted in a medium gray color similar to that depicted for the balance of the power plant structures. At least 60 days prior to the City of Ripon Planning Commission consideration of the MEGS Project, MID will provide to the City of Ripon for review and approval (through the Major Site Plan Permit Review Process) a surface treatment plan addressing MID's plans for treatment of surfaces for all MEGS structures and buildings visible to the public (MID2003rr). The intent of the surface treatment plan will be to: 1) utilize colors acceptable to the City of Ripon that will minimize visual intrusion and contrast by blending with the surrounding landscape; and 2) utilize finishes that will not create excessive glare. At a minimum the surface treatment plan will include elevation drawings with proposed colors and finishes (as shown on color brochures or color chips) keyed to major project structures, buildings, and tanks that are visible to the public. MID will maintain the surface treatment for the life of the project. Further, MID will use sub-transmission line conductors that are non-reflective and insulators that are non-refractive. With MID's commitment to treat project structures in a manner that minimizes visual contrast and glare, the project would not be a source of substantial glare that could adversely affect daytime views.

CUMULATIVE IMPACTS

As defined in Section 15355 of the CEQA Guidelines (Cal. Code Regs., tit. 14), a cumulative impact consists of an impact created as a result of the combination of the project together with other projects causing related impacts. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.

Cumulative impacts to visual resources could occur where project facilities or activities (such as construction) occupy the same field of view as other built facilities or impacted landscapes. It is also possible that a cumulative impact could occur if a viewer's perception is that the general visual quality of an area is diminished by the proliferation of visible structures (or construction effects such as disturbed vegetation), even if the new structures are not within the same field of view as the existing structures. The significance of the cumulative impact would depend on the degree to which (1) the viewshed is altered; (2) visual access to scenic resources is impaired; or (3) visual quality is diminished.

The SPPE and Data Responses (MID2003l, #91) provide a listing of projects under construction or approved and probable future projects in the area surrounding the MEGS Project site. The other development projects are as follows:

- City of Ripon Compressed Natural Gas Station at 240 Doak Boulevard
- City of Ripon Animal Shelter at 444 Doak Boulevard
- City of Ripon Corporation Yard expansion at 620 Doak Boulevard
- Nulaid Foods Inc. expansion at 200 Fifth Street
- Arrow Asphalt Project at 441 Doak Boulevard
- Al Waggoner Project at 1012 S. Acacia Avenue
- Expansion of Jim Aartman Trucking on Acacia Avenue
- Poppy Hills Residential Subdivision on the east side of S. Jack Tone Road across the street from the Jack Tone Golf Course
- Doak Boulevard Extension between Vera Avenue and S. Stockton Avenue
- S. Stockton Avenue Extension south to the new extension of Doak Boulevard

Immediately west of the MEGS site, Arrow Asphalt is proposing to construct four buildings with square footage ranging from 2,500 to 4,000 for each building. The Arrow Asphalt project would include an office building, a vehicle repair building, and two storage buildings (another two buildings are labeled on the Arrow Asphalt site plan as "future storage"). The maximum height of these buildings would be 22 feet. Also immediately west of the MEGS site and north of Arrow Asphalt, Al Waggoner is proposing to construct two buildings with square footage of 1,200 and 2,400 each. This project would include a two-story office building and a one-story workshop. The maximum height of these buildings would be 34 feet. In addition to these two projects, the owners of Aartman Trucking closed escrow in May 2003 on the parcel immediately south of their existing facility on Acacia Avenue, and immediately west of the northern end of the MEGS site (MID2003l). It is anticipated that a permit application will soon be submitted to the City for this project, which would consist of truck parking surrounded by a 6-foot high cyclone fence.

The applicant prepared visual simulations of the MEGS Project with the Arrow Asphalt and Al Waggoner projects (see **Visual Resources Figure 2C**), and the MEGS Project, with the two aforementioned projects, and the future expansion of Aartman Trucking (see **Visual Resources Figure 2D**), as these projects would be seen from KOP 1 located on Vera Avenue. The Arrow Asphalt and Al Waggoner projects have been approved (Johnston 2003). The City will require these projects to install landscaping along their frontages with the extensions of Acacia Avenue and Doak Boulevard (MID 2003l). The City of Ripon Zoning Code Section 16.148.080 requires a continuous (except where crossed by driveways and walkways) 10-foot wide (minimum) planting strip along adjacent streets in Industrial districts. At a minimum, trees must be planted at a 5-gallon container size (Johnston 2003). At the time of this analysis, the City had not received detailed landscaping plans for the Arrow Asphalt and Al Waggoner projects. The landscaping that is depicted in **Visual Resources Figures 2C and 2D** is based on information the applicant received from the Arrow Asphalt architect and

preliminary site plan for the project. The simulations depict mature, 20 year old London plane trees (*Platanus acerifolia*) planted along the Acacia Avenue frontages of all of these projects. According to Ms. Mitzi Johnston with the City of Ripon, London plane trees are the required street tree on Doak Boulevard. The aesthetics of projects in this area is of concern to the City because Doak Boulevard will connect to existing (and currently under construction) residential areas to the southwest of the MEGS Project area (Johnston 2003). Acacia Avenue does not have requirements for specific tree species. Assuming growth rates of approximately 1.5 to three feet per year, and an initial planting size of eight to 10 feet (24 inch box size), the London plane trees would be between 15 and 25 feet tall five years after planting (MID2003x). With these assumptions, these trees would provide some visual screening of the MEGS Project, as viewed from the area of KOP 1. However, the screening would not be year round because London plane trees are deciduous, and thus would drop their leaves in the fall and not regain them again until the spring. Furthermore, views of the power plant structures would be possible below the canopies of the trees.

From the KOP 1 view area, development of the MEGS Project, Arrow Asphalt, Al Waggoner, and Aartman Trucking projects would substantially replace views of evergreen trees (coast redwoods) at the Fox River Paper Company with industrial structures. **Visual Resources Figure 2E** presents a simulation of the MEGS Project and the Arrow Asphalt and Al Waggoner projects without landscaping to illustrate the cumulative view blockage of the trees in the background that would be caused by these projects. In **Visual Resources Figure 2E**, the Arrow Asphalt (shown at build-out) and Al Waggoner projects, although depicted without building design details, are shown accurately in terms of placement and scale. The deciduous London plane trees would not provide year-round screening of the proposed power plant and other industrial structures (primarily corrugated metal buildings), which have lower visual quality than the trees they would block. The visual impacts (primarily view blockage) of the MEGS Project, in combination with visual impacts of the planned and probable future projects, would be cumulatively considerable, and thus would result in a significant cumulative impact to visual resources. The visual impacts of the project's visible plumes and nighttime lighting, in combination with plumes and lighting from existing and planned projects, would increase the industrial character of the area, exacerbating the significant cumulative visual impacts caused by the structures of all the development projects.

To reduce the project's contribution to significant cumulative visual impacts, MID agrees to plant trees along the western site boundary (MID2003rr). MID would utilize fast growing, tall evergreen species planted at a sufficient density to provide maximum effective screening of the project structures within the shortest feasible time after the start of commercial operation. At least 60 days prior to the City of Ripon Planning Commission consideration of the MEGS Project (or such other period of time as specified by the City of Ripon), MID will submit a site landscaping plan to the City of Ripon for review and approval. The landscaping plan will include, at a minimum: 1) a list of the proposed plant species; 2) installation sizes; 3) expected growth rates; and 4) plant spacing. MID will maintain the landscaping, including monitoring for and replacement of unsuccessful plantings, and routine annual or semiannual debris removal, for the life of the project.

Staff has prepared a visual simulation to illustrate the effect of planting trees along the western site boundary. **Visual Resources Figure 2F** shows the project with five year old redwood trees as it would be seen from Vera Avenue to the west. Staff chose to depict redwoods (*Sequoia sempervirens*) along the western site boundary because this is the tree species that is growing on the Fox River Paper Company property to the east of the MEGS site that would be blocked from view by the MEGS and cumulative projects. In addition, redwoods are an aesthetically pleasing and commonly used landscape tree. However, another fast growing evergreen tree species may prove preferable. The redwoods shown in Figure 2F were assumed to be eight to 10 feet tall to start, planted 10 feet on center, and growing at four feet per year. This growth rate would require regular watering as redwoods thrive on a luxurious supply of water. The power plant would use non-potable water (water that is not fit for drinking) for cooling and process water demands. The use of non-potable water for irrigation is encouraged by staff and required by the City of Ripon LORS.

As depicted in **Visual Resources Figure 2F**, the redwoods five years after planting would soften the appearance of the MEGS Project and would appear about as tall as the existing redwoods are currently. Presumably, the existing redwoods on the Fox River Paper Company property would continue to grow during this time period and become visible above the top of some of the project structures. It is staff's opinion that with this level of visual screening (with either redwoods or other fast growing evergreen species and berm if needed), the project's contribution to significant cumulative impacts would be reduced such that the residual visual impacts of the project, when combined with the impacts of the existing, planned, and probable future projects, would not be cumulatively considerable. Staff considers visual impacts lasting less than five years to be short term impacts and less than significant. Furthermore, the City of Ripon will require the other development projects to install landscaping along Acacia Avenue, which would further reduce the cumulative visual impact. In the long term (e.g., 10 years), the redwoods (or other more desirable fast growing evergreen species) would be more effective at reducing visual impacts by substantially screening the project from view from the KOP 1 area.

ENVIRONMENTAL JUSTICE

Staff has reviewed Census 2000 information that shows the minority population is less than 50 percent within a six-mile radius of the proposed MEGS power plant (please refer to **Socioeconomics Figure 1** in this Initial Study). However, as indicated in **Socioeconomics Figure 1**, there are multiple census blocks with greater than 50 percent minority persons within the six-mile radius. Staff considers these to be pockets or clusters. Staff also reviewed Census 2000 information that shows the low-income population is less than fifty percent within the same radius. In the case of visual resources, staff has not identified unmitigated significant direct or cumulative impacts resulting from the construction or operation of the project, and therefore there are no visual resources environmental justice issues related to this project.

COMPLIANCE WITH LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

FEDERAL

There are no federal visual resources-related LORS applicable to the MEGS Project.

STATE

There are no state visual resources-related LORS applicable to the project.

LOCAL

The City of Ripon General Plan and Development Code (Title 16) contains visual resources-related policies, regulations and standards applicable to the proposed MEGS project, such as requirements for landscaping, design of fences and signs, screening of trash enclosures and storage areas, and exterior lighting controls (see the section of this analysis titled Laws, Ordinances, Regulations, and Standards). In several instances, the SPPE did not provide sufficient information to verify whether the proposed project would comply with all relevant regulations and standards of the zoning code. For instance, a landscaping plan was not provided in the SPPE so that compliance with requirements for minimum site landscaping and screening of storage areas and parking lots could be verified. The SPPE does not indicate whether the project would include signs, so conformance with the sign regulations could not be determined. The project would comply with setback requirements (MID2003nn). The City of Ripon would ensure that the project complies with requirements for landscaping, exterior lighting, and other applicable visual resources-related LORS through their Major Site Plan Permit Review Process.

RESPONSE TO COMMENTS

Intervenor Robert Sarvey: Intervenor agrees with staff assessment that unmitigated visual impacts will occur along the western boundary of the project. The Mitigation proposed will only provide significant screening after a long period of time depending on the landscaping growth rate. During the time that the projects landscaping will mature the projects unmitigated impact will exist. Any resident that chooses to sell their property prior to the maturity of the landscaping will have their sales price affected by their proximity to the plant. Other residents that choose to remain will be subjected to the significant adverse impact of the project.

Staff Response: *The applicant agrees to plant fast growing, tall evergreen trees along the western site boundary to mitigate the project's contribution to potentially significant cumulative impacts.* ***Visual Resources Figure 2F*** *shows the project with five year old coast redwoods as it would be seen from Vera Avenue (KOP 1) to the west. As depicted in the simulation, the trees would soften the appearance of the MEGS Project and would appear about as tall as the existing redwoods are currently. Presumably, the existing redwoods on the Fox River Paper Company property would continue to grow during this time period and become visible above the top of some of the project structures. It is staff's opinion that with this level of visual screening, the project's*

contribution to significant cumulative impacts would be reduced such that the residual visual impacts of the project, when combined with the impacts of existing, planned, and probable future projects, would not be cumulatively considerable. Staff considers visual impacts lasting less than five years to be short term impacts and less than significant. Furthermore, the City of Ripon will require the other development projects to install landscaping along Acacia Avenue, which would further reduce the cumulative visual impact. In the long term (e.g., 10 years), the redwoods (or other more desirable fast growing evergreen species) would be more effective at reducing visual impacts by substantially screening the project from view from the KOP 1 area.

CONCLUSIONS

With effective implementation of the applicant's proposed mitigation measures as described in the SPPE and supplements thereto, the proposed MEGS Project would cause less than significant direct and cumulative visual impacts. Implementation of the mitigation measures proposed by MID would be ensured through the City of Ripon's Major Site Plan Permit Review and Mitigation Monitoring and Reporting processes. Compliance with applicable visual resources-related local LORS would be ensured by the City of Ripon through their Major Site Plan Permit Review Process.

PROPOSED CONDITIONS OF EXEMPTION

During the August 8, 2003 workshop, a discussion was held concerning the need for Conditions of Exemption VIS-1 and VIS-2 that staff proposed in the Draft Initial Study (DIS). Based on that discussion, MID has revised the MEGS project to mitigate impacts from project structures and building surfaces visible to the public and landscaping along the western site boundary to the point where clearly no significant cumulative impact on the environment would occur. The changes demonstrate that the project as currently proposed would not cause significant adverse visual impacts, and additional mitigation measures proposed by staff (i.e., through Conditions of Exemption) are not necessary. Furthermore, staff is confident that the City of Ripon will ensure through their Major Site Plan Permit Review and Mitigation Monitoring and Reporting processes that the measures proposed by MID are effectively implemented. Therefore, no visual resources Conditions of Exemption are proposed.

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MID2003nn – CH2MHill/Carrier (tn:29501). Draft Initial Study Comments Set 1 – POS. Submitted to Dockets on 8/7/03.

MID2003rr – MID/Salamy. Informal Data Response, Set 6 (Visual Resources). Submitted to Dockets on 8/14/03.

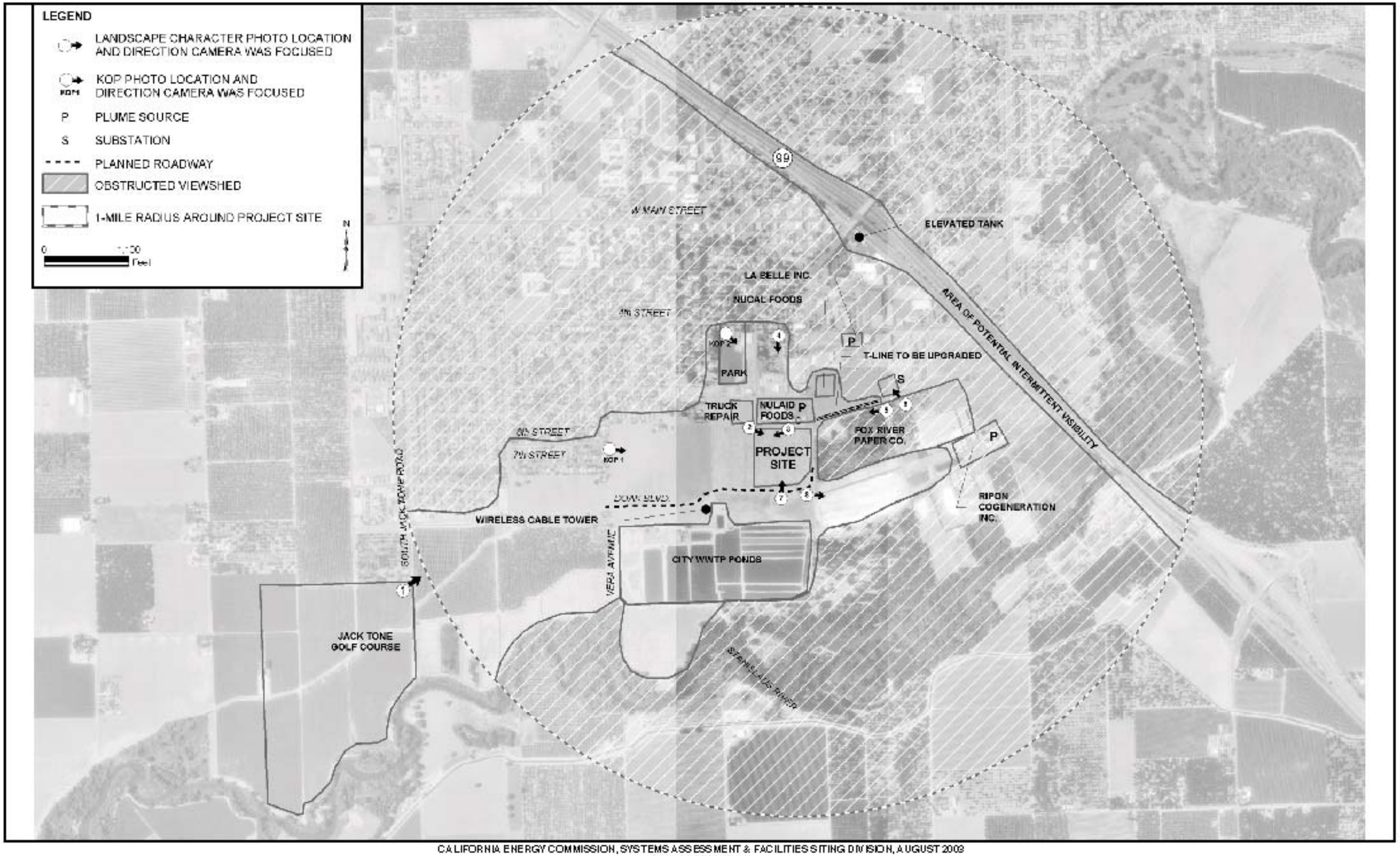
Tyhurst, Ernie. 2003. Personal communication between Ernie Tyhurst, City of Ripon Planning Department Planning Director, and Eric Knight, Energy Commission staff on July 17, 2003.

Walters, William. 2003a. E-mails from Will Walters, Air Quality Engineer, Aspen Environmental Group, to Eric Knight, Energy Commission staff dated April 23, 2003 and July 15, 2003.

Walters, William. 2003b. Personal communication between Will Walters, Aspen Environmental Group and Ken Peterson, Energy Commission staff. June 3, 2003.

Walters, Will. 2003c. E-mail from Will Walters, Aspen Environmental Group, to Ken Peterson, Energy Commission staff, dated June 3, 2003.

VISUAL RESOURCES - FIGURE 1
MEGS Project Viewshed and Location of Key Observation Points (KOPs)



VISUAL RESOURCES

AUGUST 2003

CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, AUGUST 2003
SOURCE: MID 2003a

VISUAL RESOURCES - FIGURE 2A
MEGS Project - KOP 1 - Intersection of Vera Avenue and Sixth Street - Existing View of MEGS Site

VISUAL RESOURCES

AUGUST 2003

CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, AUGUST 2003
SOURCE: MID 2003 I

VISUAL RESOURCES - FIGURE 2B
MEGS Project - KOP 1 - Intersection of Vera Avenue and Sixth Street - Simulated View of MEGS Project

VISUAL RESOURCES

AUGUST 2003

CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, AUGUST 2003
SOURCE: MID; Informal Data Response, Set 4

VISUAL RESOURCES - FIGURE 2C

MEGS Project - KOP 1 - Intersection of Vera Avenue and Sixth Street - Simulated View of MEGS Project and Arrow Asphalt and Al Waggoner Projects with mature landscaping (20 years)

CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, AUGUST 2003

SOURCE: MID 20031

VISUAL RESOURCES - FIGURE 2D

MEGS Project - KOP 1 - Intersection of Vera Avenue and Sixth Street - Simulated View of MEGS Project and Arrow Asphalt, Al Waggoner and Aartman Expansion Projects with mature landscaping (20 years)

CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, AUGUST 2003

SOURCE: MID 2003 I

VISUAL RESOURCES - FIGURE 2E

MEGS Project - KOP 1 - Vera Avenue and Sixth Street - Simulated View of the MEGS Project and Arrow Asphalt and Al Waggoner Projects without Landscaping

CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JULY 2003

SOURCE: MEGS Project Simulation: MID 2003 I; Simulation of Cumulative Projects prepared by CEC Staff

VISUAL RESOURCES - FIGURE 2F

MEGS Project - KOP 1 - Vera Avenue and Sixth Street - Simulated View of the MEGS Project with Landscaping (5 year old Coast Redwoods) and Arrow Asphalt and Al Waggoner Projects

CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, AUGUST 2003

SOURCE: MEGS Project Simulation: MID 2003 I; Simulation of Cumulative Projects prepared by CEC Staff

VISUAL RESOURCES - FIGURE 3A

MEGS Project - KOP 2 - City of Ripon Veterans Park - Existing View in Direction of MEGS Site

CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, AUGUST 2003

SOURCE: MID 2003 I

VISUAL RESOURCES - FIGURE 3B
MEGS Project - KOP 2 - City of Ripon Veterans Park - Simulated View of MEGS Project

CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, AUGUST 2003
SOURCE: MID 2003 I

WASTE MANAGEMENT

Testimony of Ramesh Sundareswaran

INTRODUCTION

The purpose of this section is to assess the potential impacts associated with the Modesto Irrigation District Electric Generation Station (MEGS) project's proposed generation and management of hazardous and nonhazardous wastes. Energy Commission staff's objective is to ensure that there will be no significant adverse impacts from wastes generated during the project's life-cycle. A brief overview of the project is provided, as are discussions regarding important checklist items with respect to hazardous and nonhazardous wastes. A discussion of additional items listed in the Hazards and Hazardous Materials portion of the checklist can be found in the **Hazardous Materials Management** section of this Initial Study (IS). The section concludes with staff's proposed conditions of exemption.

SETTING

Modesto irrigation District (MID) proposes to construct, own, and operate an electric generating facility in the City of Ripon, California (MID 2003a). The proposed facility will consist of two, natural-gas-fired, simple-cycle combustion turbine electric generators (CTG) rated at a nominal gross generating capacity of 50 megawatts (MW) each. The net electrical output of the facility would be 95 MW after plant parasitic power consumption. Zero liquid discharge (ZLD) technology will be employed to enable MID to reclaim project-generated wastewater. Such an approach would enable MID to utilize generated wastewater as a beneficial resource, thereby eliminating the wastewater stream entirely. The wastewater will comprise of water treatment plant reverse osmosis reject water, cooling tower blowdown and multi-media filter backwash water. MID is presently evaluating three options for the ZLD system. Option 1 will utilize brine concentrating and spray drying, option 2 will use high efficiency reverse osmosis and crystallization and the third option will incorporate reverse osmosis, crystallization and filter pressing. Selection of the optimal approach will be determined by MID in the final facility design (MID 2003z).

The proposed eight-acre project site is to be situated within a 12.5-acre parcel located at the intersection of South Stockton Avenue and Doak Boulevard. The SPPE Application identifies the surrounding land use as primarily industrial. The proposed project site is currently classified as industrial land. The site has previously been used as an orchard, from as early as the 1940's up to the 1980's. Please refer to the **Project Description** section for more detail.

Both non-hazardous and hazardous wastes are expected to be generated during all phases of the facility's permitted existence as described below.

IMPACTS

ENVIRONMENTAL CHECKLIST	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
HAZARDS AND HAZARDOUS MATERIALS – Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			X	
b) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				X
c) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				X
UTILITIES AND SERVICE SYSTEMS – Would the project:				
d) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?			X	
e) Comply with federal, state, and local statutes and regulations related to solid waste?			X	

DISCUSSION OF IMPACTS

The proposed project would be considered to have significant impacts relating to waste management if it would:

- ∉ create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- ∉ result in the emission or handling of hazardous materials, substances, or waste within ¼ -mile of an existing or proposed school.
- ∉ be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and would create a significant hazard to the public or environment.
- ∉ not be serviced by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs.
- ∉ not comply with federal, state, and local statutes and regulations related to solid waste.

The basis for the outcomes provided in the checklist are discussed below.

a. Create a significant hazard to the public through routine transport, disposal or use of hazardous materials- Less Than Significant Impact with Mitigation Incorporated

Preconstruction

Section 8.12.4.2 of the SPPE Application and the Phase I Environmental Site Assessment (ESA) discuss historical land use activities that may have resulted in potential hazardous waste contamination at the project site (MID 2003q, CEC 2003b). The entire parcel proposed for the MEGS project was continuously used as an orchard for approximately 50 years and DDT has been identified as a highly likely insecticide that was used at the site during those years.

A Phase II ESA was undertaken to delineate the extent of the horizontal and vertical suspected pesticide contamination at the site prior to any earthmoving (MID 2003d). The investigation, under the oversight of the Department of Toxic Substances Control (DTSC) and the CEC, was conducted in accordance with protocols contained in DTSC's interim guidance in evaluating soils at school sites that were used for agricultural activities where agricultural chemicals may pose a threat to human health and the environment (DTSC 2003a).

Results from the sampling were compared against the U.S. EPA Preliminary Remediation Goals (PRGs) identified for industrial scenarios. PRGs are chemical concentrations that correspond to fixed levels of health risk in soil, water, and air and serve as tools that can be used for evaluating and cleaning up contaminated sites. The sampling results indicate residual concentrations significantly below the PRGs. No additional sampling or remediation is therefore necessary at the site (MID 2003hh, PC 2003a).

Construction

Operation and Maintenance

The majority of the hazardous wastes can be recycled, such as used oils, solvents, glycol, and the spent SCR (Selective Catalytic Reduction NO_X control) and CO (carbon monoxide) catalysts (both classified as hazardous due to heavy metal content). The ZLD wastes have the potential to exhibit hazardous characteristics. If classified as hazardous, the ZLD wastes will need to be appropriately classified, stored for fewer than 90 days, transported, and disposed of in accordance with all applicable federal, state and local hazardous waste requirements. Should the ZLD wastes be deemed non-hazardous, it is possible that the wastes could be characterized as "California designated wastes" due to their potentially high inorganic matter (solids) content. This category of waste is either nonhazardous waste that contains pollutants that, under ambient environmental conditions at a waste management unit, could be released in concentrations exceeding applicable water quality objectives or could reasonably be expected to affect the beneficial uses of the waters of the state (Water Code, § 13173(b)) or hazardous waste which has been granted a variance from hazardous

waste management requirements pursuant to Section 66310 of Title 22 of the California Code of Regulations. Designated wastes are required to be discharged to fully contained Class I or II disposal sites. (Cal. Code Regs. tit. 27, § 20210). However, a designated waste can be discharged to a Class III disposal site if it can be demonstrated that there is a lower risk to water quality than indicated by the 'designated waste' classification.

b. Handle hazardous waste within one-quarter mile of an existing or proposed school.

There are no schools within one-quarter mile of the proposed project.

c. Located on a hazardous waste site.

The proposed site is not located on any list of hazardous materials sites compiled pursuant to Government Code section 65962.5.

d. Served by a landfill with sufficient capacity - Less Than Significant Impact.

Project operation will generate approximately 20 cubic yards/ month of nonhazardous solid wastes typical of office and maintenance activities at an industrial facility. Anticipated wastes include paper, trash, plastic, and other materials.

The total amounts of all nonhazardous solid wastes from both construction and operation activities will slightly reduce the available capacity of the disposal facility, but will not significantly affect either its daily capacity or anticipated remaining lifetime. Thus, it is estimated that this impact will be less than significant, given the capacities of the State's Class III landfills and the inclusion of recycling efforts.

CUMULATIVE IMPACTS

Due to the minor amounts of wastes generated during project construction and operation, the insignificant impacts on individual recycling and disposal facilities, and the availability of regional landfills, cumulative impacts will be insignificant for both hazardous and nonhazardous wastes.

ENVIRONMENTAL JUSTICE

Staff has reviewed Census 2000 information that shows the minority population is less than 50 percent within a six-mile radius of the proposed MEGS project (please refer to **Socioeconomics Figure 1** in this IS). However, as indicated in Socioeconomics Figure 1, there are multiple census blocks with greater than 50 percent minority persons within the six-mile radius area are. Staff considers these to be pockets or clusters. Staff also reviewed Census 2000 information that shows the low-income population is less than fifty percent within the same radius.

Based on the **Waste Management** analysis, which included consideration of information supplied by participants at staff workshops, staff has not identified significant direct or cumulative impacts resulting from the construction or operation of

the project and, therefore, there are no waste management environmental justice issues related to this project.

CONCLUSIONS

Management of hazardous and nonhazardous wastes generated during construction and operation of the MEGS Project will not result in any significant adverse impacts if MID implements the waste management procedures described in the SPPE.

REFERENCES

MID2003a - Modesto Irrigation District/Van Hoy (tn:28524). Submittal of the Small Power Plant Exemption for the Modesto Electric Generation Station 95 MW, natural gas fired simple cycle power plant. Submitted to CEC/Therkelsen/Dockets on 4/21/03.

MID2003d - CH2MHill/Salamy (tn: 28542). Appendix 8.12B - Phase I Environmental Site Assessment for the Proposed Ripon Power Plant. Submitted to CEC/Therkelsen/Dockets on 4/21/03.

CEC2003b - CEC/Reede (tn: 28661). Ripon 1st Round Data Requests – POS. Submitted to Modesto Irrigation Dist/Van Hoy/CEC/Dockets on 5/6/03.

DTSC2003a - Department of Toxic Substance Control/Hume (tn: 28705). Review of the AFC – POS. Submitted to CEC/Ringer/Dockets on 5/19/03.

MID2003q - CH2MHILl/Carrier (tn: 28899). Data Responses, Set 1-Attachment WM-93, Sampling and Analysis Plan for the Modesto Irrigation District Electric Generation Station. Submitted to CEC/Reede/Dockets on 6/6/03.

MID2003z - CH2MHILL. Small Power Plant Exemption- Supplement A. Submitted to CEC/Reede/Dockets on June 6/20/03.

MID2003hh – CH2MHill/Salamy (tn: 29270). Cover letter and the Data Response, Set 1D. Submitted to Dockets on 7/16/03.

PC2003a – Gillette (tn: 29507). Email from Maria Gillette to R. Sundareswaran re: Sampling report/results for MID Ripon Project – POS. Submitted to Dockets on 8/7/03.

GENERAL CONDITIONS OF EXEMPTION

Testimony of Ila Lewis

INTRODUCTION

The MID Electric Generation Station (MEGS) Project Compliance Plan will be developed to help track conditions of exemption. The plan provides a means for assuring that the facility is constructed and operated in compliance with air and water quality, public health and safety, other applicable laws, ordinances, regulations and standards, and conditions of exemption.

The Compliance Plan is divided into two sections:

1. Compliance general conditions of exemption which specify the framework for record keeping and reporting throughout the construction and operation phases of the project; and,
2. Conditions of exemption which contain measures that must be taken to mitigate any and all potential adverse project impacts to an insignificant level.

The Conditions of Exemption detailed in the technical subject area analysis includes a verification statement describing the means by which compliance with the condition can be verified. The verification procedures may be modified by the Commission Compliance Project Manager (CPM) as necessary to ensure compliance with the adopted conditions of exemption. Verification of compliance with the conditions of exemption will be accomplished by periodic reports filed by MEGS as required by the general conditions of exemptions.

I. DEFINITIONS

To ensure consistency, continuity and efficiency, the following terms, as defined, apply to all technical areas, including Conditions of Exemption:

SITE MOBILIZATION:

Site mobilization occurs when moving trailers and related equipment onto the site, usually accompanied by minor ground disturbance, grading for the trailers and limited vehicle parking, trenching for utilities, installing utilities, grading for an access corridor, and other related activities. Ground disturbance, grading, etc. for site mobilization are limited to the portion of the site necessary for placing the trailers and providing access and parking for the occupants. Site mobilization is for temporary facilities and is therefore not considered construction.

GROUND DISTURBANCE:

Ground disturbance occurs when onsite activity results in the removal of soil or vegetation, boring, trenching or alteration of the site surface. This does not include driving or parking a passenger vehicle, pickup truck, or other light vehicle, or walking on the site.

GRADING:

Grading occurs when onsite activity conducted with earth-moving equipment results in alteration of the topographical features of the site such as leveling, removal of hills or high spots, or moving of soil from one area to another.

CONSTRUCTION:

[From section 25105 of the Warren-Alquist Act.] Onsite work to install permanent equipment or structures for any facility. 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.
5. Any work to provide access to the site for any of the purposes specified in a., b., c., or d.

II. COMPLIANCE PROJECT MANAGER

A Compliance Project Manager (CPM) will be designated to oversee compliance with Conditions of Exemption. The assigned CPM, after consultation with the appropriate technical staff, and approval of Commission management and responsible agencies, shall:

1. Ensure that compliance files are established and maintained for the MEGS project;
2. Track compliance filings;
3. Ensure the timely processing of proposed changes to the Commission Decision;
4. Use all available means to encourage the resolution of disputes; and,
5. Coordinate compliance monitoring activities of Commission and delegate agency staff as specified in the Conditions of Exemption.

III. PROJECT OWNER RESPONSIBILITY

It shall be the responsibility of the project's owner and operator, MEGS, to comply with and ensure that the compliance general conditions and all conditions of exemption are satisfied. Failure to comply with any of the conditions of exemption or the compliance general conditions may result in reopening of the case and revocation of the SPPE, or other action as appropriate.

MEGS shall send verification submittals to the CPM, whether such condition was satisfied or work performed by MEGS or other agent, and whether or not such verification was also submitted to the CPM by an agent.

IV. COMPLIANCE RECORD

MEGS shall maintain, for the life of the project, files of all conditions of exemption correspondence, and final as-built drawings.

The Commission shall maintain as a public record:

1. All documents received regarding compliance with the conditions of exemption;
2. All complaints filed with the Commission; and,
3. All petitions for changes to conditions of exemption and documentation of the resulting staff or Commission action taken.

V. COMPLIANCE SUBMITTALS

All compliance submittals and correspondence pertaining to compliance matters shall include a cover letter with a description of the submittal and a reference to the compliance general condition and/or the condition of exemption number(s) which the submittal is intended to satisfy. All submittals shall be addressed as follows:

Compliance Project Manager
California Energy Commission
1516 Ninth Street (MS-2000)
Sacramento, CA 95814

VI. CONSTRUCTION MONTHLY REPORTS

The project owner must submit construction monthly reports to the CPM and City of Ripon as designated to assist in tracking activities and monitoring compliance with the terms and conditions of the Commission Decision. During construction, the project owner or authorized agent will submit monthly reports for air quality, hazardous material, paleontology, transportation and water.

Tasks Prior to Start of Construction

Construction shall not commence until all pre-construction conditions of exemption have been complied with. Project owners frequently anticipate starting project construction as soon as the project is exempted. In some cases it may be necessary for the project owner to file submittals prior to exemption if the required lead-time for a required compliance event extends beyond the date anticipated for start of construction. It is also important that the project owner understand that pre-construction activities that are initiated prior to exemption are performed at the owner's own risk.

Various lead times for verification submittals to the CPM for conditions of exemption 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.

The first construction monthly report is due the month following the Energy Commission business meeting date on which the project was approved, unless otherwise agreed to by the CPM.

During pre-construction and construction of the project, the project owner or authorized agent shall submit an original and three copies of the monthly report within 10 working days after the end of each reporting month. Monthly reports shall be clearly identified for the month being reported. The reports shall contain at a minimum:

1. a transmittal letter summarizing the current project construction status;
2. documents required by specific conditions to be submitted along with the monthly report. Each of these items should be identified in the transmittal letter.

VII. ANNUAL REPORTS

After the air district has issued a Permit to operate, the project owner shall submit annual reports instead of monthly reports. The reports are for each year of commercial operation and are due to the CPM and City of Ripon at a date agreed to by the CPM and City of Ripon. Annual reports shall be submitted over the life of the project unless otherwise specified by the CPM and City or Ripon. The report shall contain at a minimum:

1. a transmittal letter summarizing the current project operating status and an explanation of any significant changes to the facility operations during the year;
2. documents required by specific conditions to be submitted along with the annual report. Each of these items should be identified in the transmittal letter.

VIII. CONFIDENTIAL INFORMATION

Any information which MEGS deems proprietary shall be submitted to the Commission Docket Unit (Mail Stop 4) to be processed pursuant to California Code of Regulations Title 20 section 2505(a). Any information which is determined to be confidential shall be kept confidential as provided for in CCR Title 20 section 2501 et seq. Information deemed not to be confidential will become public information.

IX. ACCESS TO THE FACILITY

The CPM, or other designated Commission staff or agent, shall be granted access at any time to the project site, transmission line right-of-way, and related sites.

RESPONSE TO PUBLIC AND AGENCY COMMENTS

Below is an index of comments and questions received from interested members of the public and governmental agencies on staff's Draft Initial Study of the Modesto Irrigation District Electric Generation Station. The questions and comments are answered or addressed in the applicable technical section referenced below. Responses appearing in separate technical sections are included under the heading, "Response to Comments." Following the index is a copy of each comment.

AGENCY COMMENTS ON THE DIS

SAN JOAQUIN DEPARTMENT OF PUBLIC WORKS - LETTER DATED AUGUST 11, 2003

This letter contained a comment regarding the actual daily use of water. The **Project Description** section has been corrected to show average daily water demand of 83 gpm and maximum daily water demand of 167gpm. These comments are also addressed in the **Hydrology and Water Quality** section.

PUBLIC COMMENTS (NON-INTERVENORS) ON THE DIS

PAMELA AND RICHARD KAEFER – LETTER DATED AUGUST 10, 2003

The Kaefers believe there are significant impacts regarding noise that must be mitigated.

Response: Staff identified the need to measure ambient noise levels at the Kaefer residence to confirm its analysis of the SPPE. Data collection will occur on August 25 & 26, 2003. The data collected will be reported on or about August 28, 2003. Please refer to the **Noise** section for staff's condition of exemption to further monitor and reduce if necessary, noise impacts from the project.

DANIEL J. LEHMAN – LETTER DATED AUGUST 10, 2003

Mr. Lehman believes there are significant impacts regarding noise that must be mitigated.

Response: See Response above.

ROBERT SARVEY (INTERVENOR) – LETTER DATED AUGUST 10, 2003

Mr. Sarvey had comments in four areas, air quality, visual resources, noise and alternatives.

Response: His noise comments were similar to those above and were included in the **Noise** section. The comments related to air quality and visual resources are addressed in their respective sections. Mr. Sarvey's alternatives comments were taken under consideration. However, since no significant, unmitigated adverse impacts were found it is not necessary to perform an alternatives review.

THOMAS R. FLINN
DIRECTOR

THOMAS M. GAU
DEPUTY DIRECTOR

MANUEL SOLORIO
DEPUTY DIRECTOR

STEVEN MARKLER
DEPUTY DIRECTOR

BENTON ANGOVI
BUSINESS ADMINISTRATOR

Public Works
San Joaquin County
Working for YOU

P. O. BOX 1810 - 1810 E. HAZELTON AVENUE
STOCKTON, CALIFORNIA 95201
(209) 468-3000 FAX (209) 468-2999
www.co.sanjoaquin.ca.us

August 11, 2003

Dr. James W. Reede, Jr., Project Manager
California Energy Commission
1516 Ninth Street
Sacramento, California 95814-5512

SUBJECT: REQUEST FOR AGENCY COMMENTS ON THE DRAFT INITIAL STUDY FOR THE MODESTO IRRIGATION DISCTRICT ELECTRIC GENERATION STATION, RIPON APPLICATION FOR SMALL POWER PLANT EXEMPTION

Dear Dr. Reede:

The San Joaquin County Department of Public Works has reviewed the environmental document for the above referenced project and our concerns, recommendations, and corrections are as follows:

The Water Resource Division offers the following comment:

> **Water Supply and Use, Page 2-2, paragraph 4: The average daily water demand for the MEGS is approximately 122 gallons per minute (gpm) and the approximate maximum daily water demand is 244 gpm.**
>
> *The above statement is unclear as to the actual daily use. This should be corrected to reflect actual daily use.*

Thank you for the opportunity to be heard. Should you have questions or need additional information regarding the above comments, please contact me at (209) 468-3086.

Sincerely,

WENDY JOHNSON
Environmental Coordinator

WJ:tee
TR-DH032-E1

c: Mel Lytle, Water Resource Coordinator

James Reede - DID meeting, noise impacts

03-SPPE-1
CALIF ENERGY COMMISSION
AUG 11 2003
RECEIVED IN DOCKETS

From: Pamela and Richard Keefer <beastprints@bigvalley.net>
To: <jreede@energy.state.ca.us>
Date: 8/10/2003 11:32 AM
Subject: DID meeting, noise impacts

Dear Mr. Reede,
I would like to know if my objections to the noise issue are on record since they were discussed at the meeting on August 8, 2003, or do I have to file some kind of formal obection?
Having further reviewed the noise impact charts and tables on pages 11-1 to 11-17, I am not at all convinced that the changes are insignificant. Is there anything else I can do to further study these potential impacts?
I checked the distance on my car odometer from my house to the site. It is less than ½ tenths of a mile. This would equate to less than 1 km as the crow flies (or as the noise would travel)!
There are several references to the freeway and train noises that exist now, but those are not noises that our neighborhood hears at all. The noise tables on 11-8 show measurement sites A and B. We are in site B, and MID did say they had those charts, but I would like the opportunity to review them.
This is our retirement home, and I would like to believe we will be able to enjoy the peace we have now, (save the refrigeration trucks running 24/7, which we are currently addressing).
At the meeting, I believe you told Mr. Sarvey, (the intervenor present), that he had until Monday, August 11th to file any complaints.
Am I on record as having objected, or do I also have to send a letter or something? If so, to whom?
Please let me know if there are any options for us.
Thank you
Sincerely,
Pam Keefer
646 S Locust Ave
Ripon, CA 95366

P.S. I have 2 addresses for you, so I am sending this to both. Would you please advise which is correct?

Dial Broadband has arrived in California! Up to 5 times faster than traditional dialup connections from $13.23/month! See the demo for yourself at http://www.BigValley.net

PROOF OF SERVICE (REVISED 6/30/03) FILED WITH ORIGINAL MAILED FROM SACRAMENTO ON 8/11/03
ARH

James Reede - Re: MID Ripon Electric Generation Station (03-SPPE-1)

From: <DanSprig@aol.com>
To: <jreede@energy.state.ca.us>
Date: 8/10/2003 9:15 PM
Subject: Re: MID Ripon Electric Generation Station (03-SPPE-1)
CC: <beastprints@bigvalley.net>, <jaml@bigvalley.net>

Dr. Reede,

My wife and I are residence of the City of Ripon and live in the residential area that will be impacted by the proposed MID Power Plant. I was not able to attend the most recent meeting (08/08/03) due to my work schedule. I have attended meetings in the past when my work schedule permitted it. During this meeting a neighbor of mine was in attendance and had some concerns about the projected noise levels of the plant. My neighbor gave me a copy of C.E.C. Draft Initial Study for this project (03-SPPE-1).

I have reviewed section 11 (Noise & Vibration) of this document. I have a concern on the documented noise monitoring locations. Per the draft study, noise monitoring was conducted by MID at four locations (A - D). (Refer to C.E.C Draft Initial Study 11-4) The data provided in this document shows data for locations A-D. (Refer Noise: Table 2, C.E.C Draft Initial Study 11-4). Per the map that was provided in this document, the number of noise monitoring stations is five. I have read through this section several times, and I can not find any data for monitoring station B (located on Walnut Ave). (Refer to Noise-Figure 1, C.E.C. Draft Initial Study) This monitoring station data is of concern to me and my family, because we live on Locust Ave. Locust Ave is one block west of Walnut Ave. Per my neighbor, MID has this data for Station B. I would like to know why this data is not in this report? In my line of work there is a saying "If it isn't in the report, it did not happen". Was this data left out because it was incorrect or does it put this project in a bad light? My family and I would like to see what the projected decibel level for are neighborhood will be after the startup of the power plant. I would also question the four locations that MID conducted their noise monitoring. Monitoring Stations A-D is not located in residential areas. The following is a description of the area where the tests were conducted:

* Location A: Vacant fields with a trucking company lot to the east, housing development construction to the west and residential to the north. South of this location is the City of Ripon waste water treatment facility.

* Location B: Nutraid Foods Industrial Plant to the north and Nor Cal Foods to the north east, vacant fields to the south west and vacant fields to the south east.

* Location C: Industrial complex to the north, State Route 99 and the UPPR Railroad tracks to the east, an industrial complex to the west and a vacant field and a paper mill to the south.

* Location D: Has a residential area to the north and east. State route 99 is to the west and south of this location.

According to the information presented in this public record, no testing data has been provided to the C.E.C. to show what the noise levels in the residential neighborhoods to the north of the proposed project. There has been no data provided to show what the estimated decibel level will be in my neighborhood after the start up of the power plant.

We are not completely opposed to this power plant, we know that there is a need for safe and affordable power generation. What we are opposed to is harm to the tranquility of our neighborhood and a disruption of our way of life. We are also concerned that an increase of noise would adversely affect our property value. Both of these items are protected by CEQA.

In the future, I would suggest that meetings be held at a time when the public could attend. By having these meetings in the evening, more citizens of the State could have their voices heard.

At this time, my family and I object to this project because pertinent data was not included in this report on the C.E.C. review of this project. I request that the C.E.C. Staff review this matter further before this permit is sent to the Commission for a vote.

Respectively Submitted,

Daniel J. Lehman

506 S. Locust Ave
Ripon, Ca. 95366

danspring@aol.com

Robert Sarvey
501 W. Grantline Rd.
Tracy, Ca. 95376
(209) 835-7162

Comments of the MEGS Initial Study 03SPPE-1

Air Quality

Inter pollutant Ratio

Intervenor Sarvey agrees that the final study should not be issued until the SJVPCD has determined the appropriate inter pollutant ratio for SOx to Pm10. Even if the district does not change the ratio CEC staff concerns should be addressed

Ammonia Emissions

Ammonia emissions can contribute to the formation of secondary PM 2.5, trigger asthma attacks and also impair visibility. Available research has shown that ammonia emissions have the potential to contribute significantly to secondary pm-2.5 formation.

Available research (Seicer, 1982) indicates that the conversion of NO_x to nitrate is approximately between 10 to 30 percent per hour in a polluted urban area where ozone and ammonia are present in sufficient amounts to participate in the reaction. (CEC Staff FSA Consumnes Project p. 4.1-15)

CEC staff in has evaluated the potential for secondary PM 2.5 formation from ammonia emissions in an ammonia rich area and found that the potential for conversion can be up to 30%.

Staff believes that ammonia has a potential to significantly contribute to nitrate and sulfate particulate formation. Research (Watson, 1996) has shown that in an ammonia rich area, a reduction of 50 percent ammonia will reduce 15 percent of fine particulate matter, equivalent to a 30 percent conversion rate for ammonia. Thus, if CPP maintains an emission rate of 600 lbs/day of ammonia (based on the applicant's proposed 10 ppm ammonia slip level) the equivalent secondary PM2.5 (nitrates and sulfates) could be in the range of 800 to 1,400 lbs/day. Assuming a linear extrapolation of the project's PM2.5 Modeling results, staff estimates that the project's SO_x, NO_x and ammonia emissions can potentially add 2 to 3 g/m of particulate sulfates and nitrates to the ambient air on a 24-hour basis. This amount of secondary PM2.5 is approximately twice as large as the Project's proposed particulate matter emissions. (Source CEC Staff analysis Consumes Project p. 4.1-15)

The project has the potential to emit up to 58.8 tons per year of ammonia emissions. This is a substantial amount of ammonia and represents more emissions than any other criteria pollutant. The project owner may need the operational flexibility of the 10 ppm ammonia slip but should be required to provide mitigation for ammonia emissions.

Staff Normally requires offsets for Secondary Pm 2.5 formation

Staff would normally recommend mitigation, in the form of emission reduction credits, be provided to mitigate the $PM_{2.5}$ impacts from ammonia. (FSA Air Quality, p. 4.1-16) SMUD Consumes Power Project PMPD

If the 58.8 tons per year of ammonia emissions were to convert to secondary PM 2.5 at the rate of 30% the project could contribute 17.64 tons per year of secondary pm 2.5 that remains unmitigated in the projects offset scheme. If the applicant were to purchase PM-10 offsets in the Northern Region of the SJVAPCD the cost per ton of pm-10 emissions average $30,000 a ton. The cost to provide the mitigation would be 17.53 X 30 000 = 539,200 This amount or an appropriate amount determined by CEC staff could be used to provide funding for clean school buses in the Ripon area thereby offsetting all of the applicant's emissions and providing a good neighbor gesture to the community of Ripon. This approach has worked successfully in the Tracy area making the applicant an acknowledged and valued part of the community. In this case the applicant can provide the SCONOIX technology that will eliminate ammonia emissions and substantially reduce NOx emissions for the project if he chooses not to offset his ammonia emissions.

Fumigation Impacts

Since the project is located so close to a residential community fumigation impacts and the location of the maximum impacts should be closely evaluated in light of the plants proximity to existing sensitive receptors.

Visual

Intervenor agrees with staff assessment that unmitigated visual impacts will occur along the western boundary of the project. The Mitigation proposed will only provide significant screening after a long period of time depending on the landscaping growth rate. During the time that the projects landscaping will mature the projects unmitigated impact will exist. Any resident that chooses to sell their property prior to the maturity of the landscaping will have their sales

price affected by their proximity to the plant. Other residents that choose to remain will be subjected to the significant adverse impact of the project.

Noise

NOISE: Table 4
Summary of Predicted Operational Noise Levels

Receptor	Noise Levels (dB)					
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
A	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
B	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Staff estimate average background noise monitoring locations for four quietest nighttime hours
Applicant estimate (illegible)

Noise table 4 from the initial study shows that a 10 db change will occur at a residential receptor located at 1800 ft from the project. The staff's initial study on page 11-16 states " A ten dB change is subjectively heard as an approximate doubling in loudness and almost always causes an adverse community response (Kryter, Karl C. The Effects of Noise on Man. 1970 " It is also apparent that there are other residential noise receptors that are closer to the facility than 1800 feet. Staff should estimate the noise increases at these closer receptors and take a closer look at their evaluation of this impact.

Alternatives

The initial study contains no alternatives assessment. The applicant's alternatives analysis fails to consider alternative pollution control technologies such as SCONOX and ZENON which are environmentally superior. Equipment alternatives should include advanced alternatives such as SCONOX which would eliminate ammonia emissions and substantially lower NOx emissions. Sconox is feasible and available for a project of this size and its feasibility and environmental benefits should be addresses in the initial study.

PREPARATION TEAM

PREPARATION TEAM

Project Manager ..... James W. Reede, Jr., Ed.D.
Staff Counsel ..... William W. Westerfield, III
Project Secretary ..... Angela Hockaday
Executive Summary ..... James W. Reede, Jr., Ed.D.
Proposed Mitigated Negative Declaration ..... James W. Reede, Jr., Ed.D.
Introduction ..... James W. Reede, Jr., Ed.D.
Project Description ..... James W. Reede, Jr., Ed.D.
Air Quality ..... William Walters & Lisa Blewitt
Biological Resources ..... Richard York
Cultural Resources ..... Dorothy Torres
Energy Resources ..... Kevin Robinson, Steve Baker & Shahab Khoshmashrab
Geology, Mineral Resources, and Paleontology ..... Patrick Pilling, Ph.D.
Hazardous Materials ..... Geoff Lesh, P.E., Rick Tyler
Hydrology and Water Quality ..... Michael Krolak
Land Use and Recreation ..... David Flores
Noise and Vibration ..... Steve Baker
Public Health ..... Ramesh Sundareswaran
Socioeconomics ..... Amanda Stennick
Traffic and Transportation ..... James Adams
Transmission Line Safety and Nuisance ..... Obed Odoemelam, Ph.D.
Transmission System Engineering ..... Laiping Ng & Al McCuen
Visual Resources ..... Eric Knight
Waste Management ..... Ramesh Sundareswaran
General Conditions of Exemption ..... Ila Lewis
Response to Public and Agency Comments ..... James W. Reede, Jr., Ed.D.

DECLARATIONS & RESUMES

DECLARATION OF

Dr. James W. Reede, Jr.
MPPA, Ed.D

I, James W. Reede, Jr. declare as follows:

I am presently employed by the California Energy Commission in the Systems Assessments and Facilities Siting Divis on as an **Energy Facility Siting Project Manager II.**

A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

I helped prepare the staff testimony on **Executive Summary, Introduction, and Project Description** for the **Modesto Irrigation District Electric Generation Station Project** based on my independent analysis of the Small Power Plant Exemption and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

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: July 19, 2003 Signed: JWReede

At: Sacramento, California

James W. Reede, Jr., Ed.D

DR. JAMES W. REEDE, JR., Ed. D

6008 Wynnewood Way - Sacramento, CA 95823
(916) 399-1133(v) - (916) 399-1137(f)
jreede@worldnet.att.net

EDUCATION

General Engineering	U.S. Military Academy		1971
Electrical & Electronics Technology	Community College of the Air Force	Certificate	1973
Organizational Behavior	University of San Francisco	B.S.	1979
Public Policy & Administration	California State University – Sacramento	MPPA	1998
Organization & Leadership in Public Mgmt.	University of San Francisco	Ed D	2003

PROFESSIONAL TRAINING

Process Control Engineering	General Electric Technical Training Services	1975-1976
Manufacturing Management	General Electric Management Training Services	1978-1980
	Professional Designation - American Management Association	
Boardsmanship Academy	California School Boards Association	1982-1987
Contract Management	U.S. Air Force Institute of Technology	1986-1988
	Professional Designation - National Contract Management Assoc	
Federal Managers Training Institute	Office of Personnel Mgmt , U.S. Government	1986-1989
City Management Academy	City of Sacramento	1995

PROFESSIONAL EXPERIENCE

ENERGY FACILITY SITING PROJECT MANAGER II
California Energy Commission Feb 2000-Present

Managed the permitting process for electric generating plants from the Application for Certification through the issuance of the final operating permit. Recommended actions, policies, and procedures affecting the project and commission program direction. Coordinated the efforts of twenty-three technical disciplines and staff for project certification, compliance and permitting related to the California Environmental Quality Act requirements.

PUBLIC UTILITIES REGULATORY ANALYST III
California Public Utilities Commission Aug 99-Jan 2000

Performed technical and analytical research as well as consultative and advisory services in the areas of economics, finance and policy. Analyzed, evaluated, developed and recommended research methodologies and alternatives on energy related regulatory issues. Reviewed utilities' applications for revenue in various proceedings. Evaluated proposed legislation and advised Commission on potential impacts. Provided expert advice on Electric deregulation issues and testimony in support of and on behalf of the Commission.

ADJUNCT FACULTY INSTRUCTOR
University of San Francisco & National University Feb 99-Present

Instructed students in both undergraduate and graduate curriculums in Operations and Production Management, State and Local Government, Public Administration, Public Program Evaluation, and Public Policy courses.

SACRAMENTO MUNICIPAL UTILITY DISTRICT Jan 92-Jan 99

A. Senior Contract Administrator

Developed and issued a variety of construction and professional services solicitations and evaluated responses. Negotiate, award and manage contracts. Review and approve invoices. Developed the database to track Energy Services contracts. Responsible for all General Services, Facilities and construction contracts and budgets. Reviewed pending legislation to determine impact on District activities.

B. Key Accounts Contract Specialist (Temp Assignment) Feb 98-Oct 98

Develop customized power contracts for use with the District's medium and large Commercial and Industrial customers. Negotiated customer rate agreements and implemented deregulation requirements into customer service contracts. Identify potential customers for Key Account targeting and develop profiles for retention in the District's base load. Functioned as a Key Account Rep for small customers.

EDUCATION & MANAGEMENT CONSULTANT *(Self-Employed)* June 90-June 99

Provided statewide technical assistance for the California Department of Education Gender Equity Section at various school districts in the areas of minority populations, non-traditional careers, entrepreneurship and At-Risk Youth. Successfully wrote grant proposals for Carl D. Perkins Vocational & Applied Technology Education Act funding. Developed a Manufacturing Studies curriculum for the Vocational Education Division of the California State Department of Education. Served on the CDE Editorial Advisory Board for the textbook "Visions, Rites of Passage for Young African-American Men." Advised and assisted small businesses in the development and submittal of bids and aided in contract and business management.

DEFENSE LOGISTICS AGENCY March 87-May 90

A. Chief, Production & Industrial Resources

Managed the Production and Industrial Resources Branch in San Diego, which monitored 835 contractors and 6,400 contracts worth $28 Billion. Responsible for production related matters such as contract performance, pre-award surveys, technical analysis of cost proposals, and progress payment reviews. Supervised the work of 27 staff that included 18 Industrial Engineers and Specialists, 7 Contract Mgmt. Assistants and 2 clerks. Interfaced with the Pricing, Engineering, Property, Contract Administration, and Transportation Branches on a daily basis. Reviewed a wide range of technical reports and analyzed data to identify production trends. Performed employee appraisals. Developed annual budget for staff and operations. Collateral duties to establish the new San Diego Headquarters. Responsible for the site search, solicitation of lessors, the office layout, procurement of furniture, coordination of utilities installation, and logistics of the agency move.

B. Industrial Specialist Nov 85-Mar 87

Managed the contracts at the GTE residency office in Mt. View, CA. Performed in-plant production surveillance, witnessed RADAR & SONAR Systems testing, analyzed cost proposals, performed pre-award surveys, reviewed progress payment requests, verified proper use of Government owned equipment, and was part of the contract negotiation team.

CALIFORNIA PUBLIC UTILITIES COMMISSION Jun 84-Dec 84

QA Engineer - SEA Consultants

Reviewed a utility's rate hike request to determine costs to be borne by users from a QA/QC cost avoidance perspective. The contract involved review of a utilities' construction documents for 2 nuclear plants and determining what costs could have been avoided had QA/QC and management oversight activities been timely or properly implemented.

GE3 CORPORATION May 81-Nov 85

Project Manager / VP Projects / Principal

Planned, budgeted and installed Wind-Farm projects valued in excess of $30 million. Negotiated utility contracts for the sale of electricity. Interfaced with the A-E for the site civil and electrical project requirements. Responsible for land leasing, planning, development, government interface, construction bids and contracts, procurement, and public relations. Responsible for compliance with regulatory requirements of CEQA and other state and federal laws.

GENERAL ELECTRIC NUCLEAR DIVISION Jun 74-May 81

Process Control Engineer / Supervising

Responsibilities were in the fields of electrical/electronic control and instrumentation testing. Duties included writing Quality Plans, Inspection & Test Instructions, Material Review Board Chair, Process Monitoring, Test Technician training and liaison with NRC during audit to verify compliance with 10CFR50. Beginning in 1978 supervised 79 electro-mechanical inspectors, electrical/electronic testers and 2 test directors. This three-year assignment was for the assembly, factory test, shipment and on-site start-up testing of the control rooms for the Perry Nuclear Power Stations I & II and the Clinton Nuclear Generating Station.

U. S. AIR FORCE Honorable Discharge May 10, 1974 Service-Connected Disabled Veteran

PAPERS PRESENTED

DOCTORAL DISSERTATION "*Environmental Obstacles to Construction of Educational Facilities in California.*" University of San Francisco. May 2003, San Francisco, CA

1998 MASTER'S THESIS "*A Comparative Case Study of the Response by the Sacramento Municipal Utility District to the Deregulation of the California Electric Utility Industry*" California State University - Sacramento. Fall 1998, Sacramento, CA.

1998 "*California Special Districts, - History, Policies and Future Problems.*" California State University - Sacramento, Spring 1998, Graduate Studies Symposium, Sacramento CA.

1997 "*The Best Kept Secret in America - The Genius of the African-American Inventor.*" National Alliance of Black School Educators, National Convention, Reno, Nevada.

1997 "*Black Creativity and Science-The Genius of the African-American Inventor.*" International Conference on Black Creativity, Morgan State University, Baltimore MD.

1997 "*African-American Contributions to Railroad Development in the US.*" California State Railroad Museum Lecture Series, Sacramento, CA

1997 "*The Best Kept Secret in America - The Genius of the African-American Inventor.*" Portland Community College, Black History Lecturer, Portland, OR.

1997 "*Black Inventors Won the West.*" Black Cowboy Museum, Guest Lecturer, Denver, CO.

1996 "*African-American Women Inventors.*" Annual Convention of the National Postal Women's Network, Oakland, CA.

1996 "*African-American Inventors - The Legacy*" University of the Pacific, Black History Month Lecturer, Stockton, CA.

1992 "*The 1991 Redistricting Project. Reapportionment Success in Sacramento County.*" UC Berkeley, Guest Lecturer, Berkeley, CA.

1989 "*Production Management Techniques for Monitoring of Large Defense Contractors.*" Defense Logistics Agency, Alexandria, VA.

1982 "*Utilization of a Public Domain Design in the Manufacture of Wind Electric Generators.*" American Wind Energy Association, National Convention, Portland, OR

1981 "*Blacks in Energy-In or Out?*" Congressional Black Caucus Energy Braintrust, Washington, DC

1981 "*Blacks in Energy-In or Out?*" American Assoc. of Blacks in Energy, National Convention, Denver, CO.

1978 "*Process Control Techniques in the Manufacture of Nuclear Control Rooms.*" American Society for Quality Control, Portland, OR.

1977 "*Compliance with 10CFR50 in the Manufacture of Nuclear Controls and Instrumentation.*" American Society for Quality Control, Los Angeles, CA

AWARDS

1996 Community Service Award	Sacramento Urban League	Oct. 1996
1995 Human Rights Award	Human Rights / Fair Housing Commission, City & County of Sacramento	Sept. 1995
1994 Outstanding Community Leader Award	Sacramento County	Feb. 1994
1993 Alumni Achievement Award	Kappa Alpha Psi Fraternity	Mar. 1993
1992 NAACP Achievement Award	Region IX NAACP Annual Conference	Oct. 1992

COMMUNITY SERVICE

Planning Advisory Council Vice Chairman	Sacramento County Franklin-Laguna Planning Area	2000-Present
Committee Member	Teacher Recruitment Committee Elk Grove Unified School District	1999-Present
Advisory Board	Manufacturing & Product Technology Academy Elk Grove Unified School District	1994-1996
Board of Directors	North Laguna Creek Neighborhood Association	1994-Present
Board of Directors	FamiliesFirst Foster Care Agency	1993-Present
Board of Directors	Habitat for Humanity	1993-1995
Vice-President	Sacramento NAACP	1994-1996
Chairman	Dance Theater of Harlem U.C. Davis Community Outreach Campaign	1992 & 1994
Member	Vocational Education Advisory Council Sacramento City Unified School District	1992-1997
Member	Minority Advisory Council KCRA-3, KXTV-10, & KOVR-13	1992-1998
Commissioner & Vice-Chair	Human Rights/Fair Housing Commission City & County of Sacramento	1992-1994
Chairman	Community Advisory Committee Sacramento Regional Transit South Line	1992-1996
Co-Chairman	Black College Faire	1992-2000
Advisor/Consultant	Gender Equity Division California Dept. of Education	1991-1995
Co-Chairman	No. Calif. African American Young Male Conference	1991-1997
Chairman	United Negro College Fund Northern California Campaign	1992-2000
Chairman	African-American Student Career Conference	1991-1996
Co-Chairman	1991 Redistricting Project	1991-1993
Board of Directors	Western Province Kappa Alpha Psi Fraternity	1991-1994
Polemarch (President)	Kappa Alpha Psi Fraternity	90/96-00/01
Political Action Vice-Chair	California NAACP	1989-1994
Political Action Chair	Sacramento Branch NAACP	1990-1994
Chairman, Member	Relocation Appeals Hearing Board City of San Jose	1985-1987
Committee Member	California School Boards Association Legislative & Small School Districts	1983-1987
Director & Officer	California Coalition of Black School Board Members	1982-1987
Board Member	Mt. Pleasant School District San Jose, Calif.	1982-1987
Housing Commissioner	City of San Jose	1981-1987

INSTRUCTIONAL HISTORY
COURSES TAUGHT

COLLEGE LEVEL COURSES

1. Operations & Production Management	National University	Mar 99, Oct 00 & Jan 01
2. Performance Measurement Systems	National University	April 1999
3. Training for Organizations	National University	June 1999
4. Public Program Evaluation	University of San Francisco	June/Aug 1999
5. Personnel Procurement & Placement	National University	July 1999
6. State & Local Government	National University	Sept 99, Apr 01 & May 01
7. Government & Community Relations	National University	Oct 1999
8. Public Finance & Grants Admin	National University	Feb & Nov 2000
9. Managing for Productivity & Quality	National University	Mar & May 2000
10. Urban Planning & Technology	National University	Sept 00 & May 01
11. Seminar in Urban Affairs	National University	Sept 99, May 00 & Apr 01

WORKSHOPS AND TEACHER IN-SERVICE

1. Inclusion of Black Inventors into Social Science, History and Science curricula.	1994 - Present
2. Teaching the Patent and Trademark Process to Students.	1994 - Present
3. Inclusion of Careers in Technology into Life Skills lesson plans.	1991 - 1995
4. Non-Traditional Careers	1991 - 1995
5. Organizing Non-Traditional Career Fairs	1991 - 1995
6. The Integration of Career and Life Planning with academics.	1991 - 1995
7. Understanding the Young African-American Male in the School Environment	1991 - 1995

PROFESSIONAL TRAINING COURSES TAUGHT

1. Basic & Advanced Contract Administration	1988 - 1990
2. Principles of Contract Pricing	1988 - 1990
3. Defense Contract Production Monitoring	1987 - 1990
4. Operating Costs, Budgets & Measurements	1987 - 1990
5. Developing a Permitting Process for Wind Generators	1981 - 1984
6. Nuclear Control Room Testing	1978 - 1981
7. Inspection techniques for Nuclear Control and Instrumentation	1977 - 1981

California CBEST Passed **February 1999**

DECLARATION OF
William D. Walters

I, **William Walters** declare as follows:

1. I am presently employed by Aspen Environmental Group, a contractor to the California Energy Commission, in the Agoura Hills office 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 helped prepare the staff testimony on **AIR QUALITY**, for the **MODESTO IRRIGATION DISTRICT ELECTRIC GENERATING STATION - RIPON PROJECT** based on my independent analysis of the Small Power Plant Exemption 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: July 14, 2003 Signed: _____

At: Agoura Hills, California

WILLIAM WALTERS, P.E.
Air Quality Specialist

ACADEMIC BACKGROUND

B.S., Chemical Engineering, 1955, Cornell University

PROFESSIONAL EXPERIENCE

Mr. Walters has over sixteen years of technical and project management experience in environmental compliance work, including environmental impact reports, RCRA/CERCLA site assessment and closure, site inspection, source monitoring, emissions inventories, source permitting, and energy and pollution control research.

Aspen Environmental Group **2000 to Present**

Responsible as lead technical and/or project manager of environmental projects. Specific responsibilities and projects include the following:

- Preparation and/or project management of the air quality section of the Staff Assessment and/or Initial Study 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
  - Henrietta Peaker Project
  - Tracy Peaking Power Plant Project
  - San Joaquin Valley Energy Center
- Assistance in the preparation of the noise assessment section of the Staff Assessment for the Contra Costa Power Plant CEC licensing project.
- Preparation of the staff paper "Emission Offsets Availability Issues", and preparation of the Emission Offsets Constraints Workshop Summary paper for the CEC.
- Preparation and project management of the public health section of the Initial Study for the Woodland Generating Station 2 CEC licensing project.
- Issue area coordinator providing support for the air quality analyses and/or visual plume assessments for the Inland Empire Energy Center, Los Esteros Critical Energy Facility, Palomar Energy Project, Avenal Energy Project, and the Tesla Power Plant Project

- Preparation and/or project management of the visual plume assessment for the following California Energy Commission (CEC) 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
  - Magnolia Power 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
  - City of Vernon Malburg Combined Cycle Plant
  - Inland Empire Energy Center
  - Palomar Energy Project
  - San Joaquin Valley Energy Center
  - Woodland Generating Station 2
  - Hanford Energy Park
  - United Golden Gate, Phase I
  - Huntington Beach Modernization Project
  - Ocotillo Energy Project, Phase I
  - Colusa Power Project
  - Henrietta Peaker Project
  - Tracy Peaking Power Plant Project
  - Avenal Energy Project

- Preparation of the air quality section of the PG&E Hydrodivestiture Draft EIR/EIS for the California Public Utilities Commission (CPUC).

- Emission inventory for the construction activities forecast for the San Jose/Old San Jose Creeks Ecosystem Restoration project for the United States Army Corps of Engineers (USACE).

- Preparation of emission inventory and Conformity Analysis of the Murrieta Creek Flood Control Project for the USACE

- Preparation of permit applications, emission calculation spreadsheets, and an air quality compliance manual for Desa International's Southern California manufacturing facility.

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 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. Project manager for the concurrent Process Safety Management plan support for the J.R. Simplot Hermiston Oregon and Heyburn Idaho facilities and the project manager/technical lead for the RMP support for the SSI food processing facility in

Wilder, Idaho and the Atlantic Custom Processors food processing facility in Fort Fairfield, Maine

- 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

- Air quality audit for a confidential can manufacturing company at two manufacturing sites.

- Completion of an environmental tax credit application for the J.R. Simplot Hermiston Oregon food products facility.

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.

- Completion of intersection "CO Hotspots" modeling, ambient monitoring, and deposition monitoring reports for LAWA in support of the LAXMP.

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

- 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.

- Review and revision of an Air Contaminant Discharge Permit application, Title V permit application, and PSD modeling analysis for J.R. Simplot's Hermiston, Oregon food processing facility.

- Source test methodology and equipment selection for testing inlet and outlet concentrations of total petroleum hydrocarbon and benzene from soil gas extraction/oxidation units for Cascade Earth Sciences, Ltd.

- Preparation of a Tier II (synthetic minor) permit application for the American Fine Foods' Payette, Idaho food processing facility.

- Emission inventory and compliance evaluation for Simplot's Aberdeen, Idaho food processing facility

- Preparation of an Air Contaminant Discharge permit application for Marlette Homes, Inc. Hermiston, Oregon manufactured housing facility.

- Preparation of a Title V permit application for Simplot's Helm, California fertilizer manufacturing facility

- Source test contractor selection and test oversight for J.R. Simplot's food processing plant in Hermiston, Oregon, and Boise Cascade's wood-fired boiler in Willamina, Oregon.

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 seven properties located in Southern California.

- Prepared Environmental Baseline Reports for 33 sites in Guam for the U.S. Navy.

- Prepared site investigation and RCRA closure plan report for Olin Hunt Specialty Chemical's Vernon, California, hazardous waste storage site.

- 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

- Task manager for nine site investigations under the EPA Region VI ARCS contract. Project activities included data collection, work plan preparation, field sampling, final report preparation, and Hazard Ranking System (HRS) PREscore preparation.

- For the Hanford (Washington) Waste Vitrification Project,
  prepared an air emission inventory for criteria pollutants
  - prepared an emission inventory and compliance evaluation of toxic air pollutants
  - performed compliance review of design drawings and equipment specifications
  - analyzed failure probability and consequence analysis of design-basis accidents.

- Prepared fugitive and point source VOC emission estimates and performed a "Top-Down" BACT analysis for a 217 MMBtu/hr steam boiler for a proposed ethanol production facility in Great Falls, Montana

- 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 (under California's AB2588), prepared for U. S. Borax's boron mining and refining facility and the Naval Aviation Depot (North Island Naval Base, San Diego, California).

- Prepared air permit applications and regulatory correspondence for several facilities:

  U. S. Department of Energy's Feed Material Production Center uranium processing facility in Fernald, Ohio
  -Emission sources at a confidential high technology electronics manufacturing facility
  - Evaluation of a sludge dewatering process at Unocal's Wilmington, California, Refinery
  -United Airlines blade repair facility at the San Francisco Airport
  - Relocation of Kerr-McGee's rocket fuel storage and blending facility to Apex, Nevada.

- Prepared source testing plans, Quality Assurance/Quality Control (QA/QC), and testing oversight for several facilities including:

  -QA/QC for RCRA air emissions sampling plan for the Department of Defense's Chem-Demil facility on Johnston Atoll
  - Prepared plan and provided QA/QC and field oversight for emissions testing at Baxter Healthcare in Irvine, California
  - Prepared plan and provided testing oversight for Kerr-McGee's existing ammonium perchlorate manufacturing facility in Henderson, Nevada.

- Completed identification of air permitting regulations and control technology requirements for a proposed 30,000 barrel per day catalytic cracking unit for Coastal Corporation's Pacific Refinery, located in Hercules, California

- 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.

- Assisted in selection and design of air pollution control equipment for various clients

- Prepared environmental reports, including waste stream quantification and characterization for several proposed facilities, including:

  - Lake Minerals proposed soda ash plant at Owens Lake, California
  - Minsal's proposed potash facility located on the Salar de Atacama in Chile.

San Joaquin County Air Pollution Control District **During 1987 and 1988**

Mr. Walters served as an air pollution engineer and was responsible for the following: start-up site inspections of air pollution sources; monitoring source tests and evaluating source test reports, permitting minor and major sources of air pollutants; processing emission banking applications; and aiding in the preparation of the District's Best Available Control Technology (BACT) quarterly reports, Reasonable Further Progress reports, and emission inventories.

Adelphi Center for Energy Studies **1985 to 1986**

Mr. Walters served as a combustion facility manager/research engineer and was responsible for the following: management and implementation of all conventional and novel fuel combustion projects, including the preparation of interim and final reports; conducting source tests using EPA methods 1-4 and 17, and the data analysis of all combustion tests; maintenance and repair of all combustion facility equipment; preparation of all combustion project proposals; and implementation and data analysis of fuel atomization studies, fuel rheology research, and bench scale coal ash removal research

CERTIFICATIONS

Chemical Engineer, California License 5973
CARB, Fundamentals of Enforcement Seminar
EPA Methods 1-8, 17; Training Seminar

PAPERS

Authored

"Current and Future Air Pollution Emission Offset Requirements, and Impacts to the Pacific Northwest". PNWIS/CPANS Air and Waste Management Chapters Annual Meeting. November 17, 1995.

Co-Authored

"Gas Co-Firing of the CWF for Package Boiler Applications". Presented at the Third Annual Pittsburgh Coal Conference. September 1986.

"Implications of Slurry Fuel Rheology on Atomization." American Society of Engineers

"Factors Affecting Atomization of CWF", Presented at the Eighth International Symposium of Coal Slurry Fuel Preparation and Utilization. Orlando, FL May 1986.

DECLARATION OF
Lisa A. Blewitt

I, **Lisa Blewitt** declare as follows:

1. I am presently employed by Aspen Environmental Group, a contractor to the California Energy Commission, in the Agoura Hills office as an 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 helped prepare the staff testimony on **AIR QUALITY**, for the **MODESTO IRRIGATION DISTRICT ELECTRIC GENERATING STATION - RIPON PROJECT** based on my independent analysis of the Small Power Plant Exemption 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: July 11, 2005 Signed: Lisa A. Blewitt

At: Agoura Hills, California

LISA A. BLEWITT
Associate Engineer/Physical Scientist

ACADEMIC BACKGROUND
B.S., Chemical Engineering, University of California, Santa Barbara, 1996

PROFESSIONAL EXPERIENCE

Miss Blewitt is a chemical engineer with experience in air, plume and noise analysis. Prior experience includes refinery and power plant design. Project management experience includes helping manage the Aspen team (Aspen employees plus all subcontractors) for several California Energy Commission (CEC) projects, and support on various proposals.

Aspen Environmental Group **August 2001 to present**

Miss Blewitt's project experience at Aspen includes the following.

California Energy Commission (CEC): Miss Blewitt performed plume analysis and/or air quality analysis on several projects to support the Staff Assessments for the CEC's CEQA equivalent review process. She helps manage the Aspen team as Power Plant Coordinator (PPC). Coordination of the Aspen team with CEC project managers includes providing up-to-date information to all members of the team, identifying key issues, and preparing monthly progress reports. She also manages the Aspen team as the overall Aspen PPC for all CEC projects by providing weekly progress reports to all Aspen PPC's.

- **Avenal:** AFC for 600 MW combined cycle plant located in Avenal, Kings County. Miss Blewitt performed the plume analysis for the cooling tower, heat recovery steam generators (HRSGs), and auxiliary boiler.
- **Blythe 2:** Aspen Team Power Plant Coordinator to support the Staff Assessment of the AFC for a 520 MW combined cycle power plant located entirely within the previously approved Blythe Energy Project facility boundaries west of the City of Blythe, Riverside County. Miss Blewitt will be performing the plume analysis. She also performed a cooling tower plume ground level fogging analysis to determine impacts to surrounding roadways.
- **Central Valley Energy Center:** Aspen Team Power Plant Coordinator to support the Staff Assessment of the AFC for a 1,060 MW combined cycle power generation facility located in the City of San Joaquin, Fresno County. Miss Blewitt assisted with the air quality analysis, and performed the plume analysis for the cooling tower, HRSGs, and auxiliary boiler. She also performed a cooling tower plume ground level fogging analysis to determine impacts to surrounding roadways.
- **Colusa CC:** AFC for a 500 MW combined cycle power generation facility located west of the City of Williams in Colusa County. Miss Blewitt assisted with the air quality analysis.
- **East Altamont:** AFC for a 1,100 MW combined cycle power generation facility located southeast of Tracy in Alameda County. Miss Blewitt assisted with the cooling tower plume analysis. She also performed a cooling tower plume ground level fogging analysis to determine impacts to surrounding roadways.

- **Henrietta:** AFC for a 91.4 MW simple cycle power plant to be located west of the City of Lemoore, in Kings County. Miss Blewitt assisted with the air quality analysis and performed the plume analysis for the HRSGs. This plant did not require a cooling tower.
- **Inland Empire:** AFC for a 670 MW combined cycle power plant to be located near the town of Romoland and Perris, within an unincorporated area of Riverside County. Miss Blewitt performed the plume analysis for the cooling tower, HRSGs, and auxiliary boiler.
- **Los Esteros Critical Energy Facility:** Aspen Team Power Plant Coordinator to support the Staff Assessment of the AFC for a 180 MW simple cycle peaking plant in San Jose, CA.
- **Magnolia:** AFC to add 250 MW of new generation at Magnolia Generation Power Plant in Burbank, CA. Miss Blewitt assisted in the air quality analysis and performed the plume analysis for the cooling tower and HRSGs. She also performed a cooling tower plume ground level fogging analysis to determine impacts to surrounding roadways.
- **Roseville Energy Facility:** AFC for 900 MW combined cycle power plant five miles northwest of downtown Roseville in Placer County. Miss Blewitt performed the plume analysis for the cooling towers.
- **SMUD Consumnes:** AFC for 1000 MW combined cycle power plant to be located at the Rancho Seco Nuclear Power Plant in Sacramento County. Miss Blewitt performed the plume analysis for the cooling towers and HRSGs.
- **South Star:** AFC for 100 MW simple cycle power plant (SS I) located in the Texaco South Midway-Sunset Oilfield, Kern County. Miss Blewitt assisted with the air quality analysis. Project cancelled.
- **Spartan:** Power Plant Coordinator for Aspen team to support the Staff Assessment of the AFC for a 96 MW simple cycle peaking plant in San Jose, CA. Project cancelled.
- **Tracy:** Aspen Team Power Plant Coordinator to support the Staff Assessment of the AFC for a 169 MW simple cycle power plant to be located southwest of the City of Tracy, in western San Joaquin County. Miss Blewitt also assisted with the air quality analysis and performed the plume analysis based on results from Spartan I Energy Center Project.
- **Vernon:** AFC for the Malburg Generating Station (MGS), a 120 MW combined cycle power plant to be located in the City of Vernon, Los Angeles County. Miss Blewitt performed the plume analysis for the cooling tower and HRSGs. She also performed a cooling tower plume ground level fogging analysis to determine impacts to surrounding roadways.

Los Angeles Unified School District (LAUSD): Miss Blewitt performed noise analysis and/or parking studies for the following projects.

- **Wonderland:** Three story stick building classroom addition to an existing elementary school. Miss Blewitt attended a site visit to analyze the current project alternative, and provided an update to the project manager regarding the impact to issues previously identified for the original configuration. Miss Blewitt performed the noise analysis for the proposed project in October 2002.
- **Narbonne:** Portable additions to an existing high school. Miss Blewitt performed a parking study to determine baseline parking conditions prior to addition of new portables.
- **Wilson:** Portable additions to an existing high school. Miss Blewitt performed a parking study to determine baseline parking conditions prior to addition of new portables.

- **Reseda:** Portable additions to an existing high school. Miss Blewitt performed a noise analysis in October 2002 to determine the significance of noise impacts due to the addition of fifteen classroom buildings and two sanitary buildings on the existing school campus. Coordinated with staff to incorporate all District comments into the Initial Study, and prepared the draft Mitigated Negative Declaration.

Proposals: Miss Blewitt assisted in the development of the following proposals:

- **Department of Water and Power On-Call:** Miss Blewitt coordinated the subcontractors including collecting all resumes, project descriptions, firm descriptions, and references.
- **Miguel Mission:** Miss Blewitt coordinated the subcontractors including collecting all letters of participation, conflict of interest statements, disclosure tables, resumes, project descriptions, technical approaches, and references.

Fluor Daniel, Inc. **August 1996 to July 2001**

Miss Blewitt was a Process Engineer at Fluor Daniel, Inc. in Aliso Viejo, CA from August 1996 to July 2001. She did process design work for both refineries and power plants.

- **Occidental Chemical Taft Cogeneration Project:** Worked with Duke Fluor Daniel to independently develop the design of multiple process systems including wastewater treatment, storm water, potable water, hydrogen and natural gas. Coordinated and discussed design issues with civil/structural, architectural, piping, mechanical, project engineers and the client to develop and optimized, cost effective design. Developed process flow diagrams (PFD) and piping and instrument diagrams (P&ID) to meet all safety and operability requirements set by the client and industry standards. Confirmed piping layouts met system hydraulic requirements for proper operation considering design and alternate operating cases.
- **Georgia-Pacific Steam Reformer Project:** Lead flue gas recycle study to determine operating requirements for combustion in pulse heaters
- **Syncrude Canada Upgrader Expansion (UE-1) Project:** Prepared the Design Basis Specification and defined the revamp modifications required to debottleneck a Naphtha Hydrotreater Plant. Conducted the PFD Review for design approval with the client in Fort McMurray, Alberta, Canada. Simulated the Naphtha Hydrotreater Plant. Completed multiple configuration studies to determine the best configuration for UE-1.

ADDITIONAL TRAINING AND COURSES:
Engineer-In-Training Certificate
UCSB Extension 2-day class - Preparing CEQA/NEPA Documents
UCSB Extension Project Management Professional Certification Program (9/02 - 06/03) – 16 units total

PROFESSIONAL AFFILIATIONS: UCSB Alumni Association

DECLARATION OF
Richard York

I, **Richard York** 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 Division** as a **Planner II**.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Biological Resources section** for the **Modesto Irrigation District Electric Generation Station** project based on my independent analysis of the Small Power Plant Exemption application 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: July 8, 2003 Signed: Richard York

At: Sacramento, California

RICHARD YORK

WORK EXPERIENCE SUMMARY

Experienced in biological resource assessment including endangered species surveys, field survey protocols, endangered species mitigation and monitoring, coordination with state and federal agencies, and wetland delineation. Educational background emphasized biological resources, plant identification and taxonomy, general ecology, and herbarium specimen curatorship.

WORK EXPERIENCE

1989 to date - PLANNER II, California Energy Commission. I provide independent biological resource assessments of proposed energy facilities and review implementation of biological resource conditions of certification required by the Warren-Alquist Act and the California Environmental Quality Act. Once energy facilities are constructed and operating, I am responsible for making sure each facility operates in compliance with associated biological resources conditions of certification. These conditions of certification involve endangered species protection, habitat restoration and monitoring, off-site habitat compensation, and wildlife surveys.

I am also involved with various preserves in the San Joaquin Valley (Semitropic Ridge and Lokern) that were established with Energy Commission mitigation funds. Also, I edited the endangered species and sensitive biological resource policy paper for the California Energy Commission's Energy Facilities Siting and Environmental Protection Division.

1986 to 1989 - BOTANIST, The Nature Conservancy. Collected, mapped and computerized rare plant location and ecological information for the California Natural Diversity Data Base while under contract to the California Department of Fish and Game. Required statewide coordination with many other botanists, some field work, and management of contracts.

1980 to 1986 - BOTANIST, California Native Plant Society. Compiled and co-edited the 3rd edition of the California Native Plant Society's statewide *Inventory of Rare and Endangered Vascular Plants of California*. Work involved field surveys, attendance at public meetings and statewide board meetings, coordination and supervision of volunteers, data base management and quality control, endangered species regulatory review and comment, coordination with state and federal agencies, and writing special plant status reports.

1975 - 1980 **BOTANIST/RANGE TECHNICIAN** (Bureau of Land Mgmt., Wyoming)
HERBARIUM ASSISTANT (Humboldt State University)
RESEARCH ASSISTANT (California Native Plant Society)
PARK AIDE (California Department of Parks and Recreation)
PRIVATE BOTANICAL CONSULTANT (Six Rivers National Forest)

EDUCATION

- **B. S. BOTANY** (1979) - Humboldt State University, Arcata, California
- **B. A. PSYCHOLOGY** (1979) - Humboldt State University, Arcata, California

AWARDS

- **1992 RARE PLANT CONSERVATION AWARD** – California Native Plant Society

PROFESSIONAL AFFILIATIONS

- California Native Plant Society
- California Botanical Society
- The Nature Conservancy
- Interagency Botanists
- The Wildlife Society

DECLARATION OF
Dorothy Torres

I, **Dorothy Torres** declare as follows:

1. I am presently employed by the California Energy Commission in the Environmental Office of the Systems Assessment and 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 prepared of the Staff Testimony on **CULTURAL RESOURCES**, for the MID Electric Generating Station based on my independent analysis of the Small Power Plant Exemption 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: 7/14/03 Signed: Dorothy Torres

At: Sacramento, California

Dorothy E. Torres

EXPERIENCE:

September 2002-
Present

Planner II: Cultural, Socioeconomic and Visual Unit, Systems Assessment and Facilities Division, California Energy Commission. Duties: As a Planner II, I identify, describe, and analyze complex cultural resources issues related to electrical energy production facilities, alternative energy technologies, energy research and development and Commission programs. This includes the preparation of sections of initial studies, environmental impact reports and Commission reports.

In addition, I prepare independent assessments of the cultural resources aspects of Notices of Intention, Applications for Certification, and Small Power Plant Exemptions. The final analyses include the preparation and presentation of expert technical testimony, which is presented at Commission hearings.

I also coordinate and work with federal, state, regional and local governments; cultural resources related agencies; environmental organization and universities; Native American or other ethnic groups; archaeological or historical professional organizations; and members of the general public regarding energy-related issues to assure their input into the Commission power plant siting process and other Commission programs.

Moreover, I lead or participate in workshops and meetings concerning Commission projects, programs and policies, amongst and between project applicants, staff, other governmental agencies, private organizations, and the public.

In addition, I examine and evaluate existing and proposed laws, ordinances, regulations, standards, and policies pertinent to the visual, cultural aspects of proposed energy facilities on Commission programs. After permitting, I evaluate the licensee's compliance with conditions of certification for power plant facilities.

April 2001-
August 2002

Planner I: Cultural, Socioeconomic and Visual Unit.

Systems Assessment and Facilities Division. California Energy Commission. Duties: I gather, organize and analyze cultural resources data and identify issues, impacts and mitigation measures ensuring compliance with the California Environmental Quality Act. I provide oversight for consultants working on siting applications in the area of cultural resources. I participate in workshops and meetings concerning Energy Commission projects and programs. In addition, I interact with Division technical staff and staff representing other Divisions, local and regional government staff/decision makers, federal and state agency representatives and consultants/experts in the areas of anthropology, archaeology, history and related fields. I prepare written assessments of energy related documents.

December 1998-
March 2001

Energy Analyst: Community and Cultural Resources Unit, Energy Facilities Siting and Environmental Protection Division, California Energy Commission. Duties: I assist in gathering, organizing and analyzing cultural resources data and identify issues, impacts and mitigation measures. I assist in coordinating with local governments, resource protection agencies, environmental organizations and business organizations. Furthermore, I participate in workshops and meet ngs concerning Energy Commission projects and programs. I evaluate existing and proposed laws, ordinances, regulations, standards, and policies pertinent to the cultural resource aspect of proposed energy facilities. I prepare written assessments of energy related documents.

EDUCATION:

Spring 1988 — M.A., Anthropology
California State University, Sacramento

Spring 1980 — B.A., Anthropology and History
California State University, Sacramento

Professional Organizations — Society for California Archaeology
Sacramento Archaeological Society

DECLARATION OF
Kevin Robinson and Shahab Khoshmashrab

We the undersigned, declare as follows:

1. We are presently employed by the California Energy Commission in the **Engineering Office** of the Systems Assessment and Facility Siting Division as

   Mechanical Engineers-Mr. Robinson and **Mr. Khoshmashrab.**

2. Copies of our professional qualifications and experience are attached hereto and incorporated by reference herein.

3. We prepared the Staff Testimony on **Energy Resources**, for the **Modesto Irrigation District Electric Generation Station** based on our independent analysis of the Application for Small Power Plant Exemption and supplements thereto, data from reliable documents and sources, and our professional experience and knowledge.

4. It is our professional opinion that the prepared Testimony is valid and accurate with respect to the issues addressed therein.

5. We are personally familiar with the facts and conclusions related in the testimony and if called as witness(es) could testify competently thereto.

We declare under penalty of perjury that the foregoing is true and correct to the best of our knowledge and belief.

Kevin Robinson _____

Shahab Khoshmashrab _____

Dated. July 14, 2003

At Sacramento, California

Shahab Khoshmashrab
Mechanical Engineer

Experience Summary

Eight 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, and engineering and policy analysis of thermal power plant regulatory issues.

Education

- California State University, Sacramento-- Bachelor of Science, Mechanical Engineering

Professional Experience

2001-2003--Mechanical Engineer, Systems Assessment and Facilities Siting– California Energy Commission

Performed analysis of generating capacity, reliability, efficiency, 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.

KEVIN ROBINSON
Mechanical Engineer

Experience Summary

Three years experience in the electric generation field, including mechanical design, QA/QC and construction of hydroelectric plant systems; and engineering and policy analysis of geothermal, natural gas-fired and thermal power plant regulatory issues.

Education

- California State University, Chico—Bachelor of Science, Mechanical Engineering
- Certified EIT, California

Professional Experience

2001 to Present—Mechanical Engineer, Systems Assessment & Facility Siting Division, Engineering Section – California Energy Commission

Responsible for analysis of generating capacity, reliability, efficiency, and the mechanical, civil/structural engineering aspects of power plant siting cases.

2000 to 2001—Mechanical Engineer, Oroville Field Division, Engineering Section – California Department of Water Resources

Assist in the preparation of designs, technical specifications and cost estimates for mechanical equipment at a hydroelectric power plant. Coordinate the design, installation, and inspection of mechanical equipment. Assist in preparing test reports, and recommendations for corrective action.

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 Systems Assessment and 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 supervised the preparation of the staff testimony on **ENERGY RESOURCES**, and prepared the staff testimony on **NOISE AND VIBRATION** for the **MID ELECTRIC GENERATION STATION PROJECT** based on my independent analysis of the Application for Small Power Plant Exemption 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. Oct 14 2003 Signed Steve Baker

At: Sacramento, California

STEVE BAKER, P.E.
Senior Mechanical Engineer

Experience Summary

Twenty-nine 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 6/30/04

Professional Experience

1990 to Present--Senior Mechanical Engineer, Siting & Environmental Division - California Energy Commission

Technical lead person for the analysis of generating capacity, reliability, efficiency, noise, 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
PATRICK A. PILLING, Ph.D., P.E., G.E.

I, PATRICK A. PILLING, declare as follows:

1. I am presently employed by Black Eagle Consulting, Inc., under contract with the California Energy Commission Systems Assessment and Facilities Siting Division as a **GEOTECHNICAL 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 **GEOLOGY AND PALEONTOLOGY**, for the **MODESTO IRRIGATION DISTRICT ELECTRIC GENERATION FACILITY** based on my independent analysis of the Small Power Plant Exemption 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: July 14, 2003 Signed: _____

At: Reno, Nevada

PATRICK A. PILLING, Ph.D., P.E., G.E.

Executive Vice President

Principal Geotechnical Engineer

Education

- B.S. – Civil Engineering – 1986 – Santa Clara University
- M.S. – Civil Engineering – 1991 – San Jose State University
- Ph.D. – Civil Engineering – 1997 – University of Nevada, Reno

Registrations

- P.E. – Civil – Nevada, California, Oregon, Utah, Arizona
- P.E. – Geotechnical – California

Associated Experience

- University of Nevada, Reno - Course Instructor - CE 771 - Mining Waste Containment Design
- University of Nevada, Reno - Course Instructor - CE 771 - Practical Foundation Engineering

Experience

1997 to Present: Black Eagle Consulting, Inc.; Executive Vice President. Dr. Pilling maintains over 17 years of construction, geotechnical, and mining engineering experience, and has supervised the engineering and construction of such projects throughout the western United States and South America. As Executive Vice President, Dr. Pilling oversees daily office operations, including personnel and accounting issues, coordinates company marketing efforts, and performs project management, engineering and laboratory analyses, and report preparation on most projects.

1996 to 1997: SEA, Incorporated: Senior Geotechnical Engineer. Dr. Pilling provided project coordination, management, supervision, and development, and performed field exploration, engineering analyses, and report preparation.

1990 to 1996: WESTEC; Project Manager. Mr. Pilling was responsible for general geotechnical analyses on most projects, as well as design, management, and permitting of heap leach and tailings storage facilities projects. His experience varied from foundation design recommendations for small pump house structures to detailed liquefaction and seepage/slope stability analyses for large earthen embankments.

1986 to 1990: Case Pacific Company: Project Manager. Mr. Pilling provided cost estimating, project management, and contract negotiation on a wide variety of projects. Responsibilities included design and construction of drilled shafts, earth retention, and underpinning systems, in addition to construction scheduling and cost control.

Affiliations

- American Public Works Association
- American Concrete Institute- Concrete Field Testing Technician Grade I
- National Society of Professional Engineers
- Secretary/Treasurer - National Society of Professional Engineers, Northern Nevada Chapter
- American Society of Civil Engineers
- International Association of Foundation Drilling
- National Council of Examiners for Engineering and Surveying
- American Society of Engineering Education

Publications

Ashour, M., Norris, G., M. Bowman, S., Beeston, H., Pilling, P., and Sharmsabadi, A., Modeling Pile Lateral Response in Weathered Rock," Proceeding 36th Engineering Geology and Geotechnical Engineering Symposium, University of Nevada, Las Vegas, 2001.

Ashour, M., Pilling, P., and Norris, G.M., "Assessment of Pile Group Response Under Lateral Load," Proceedings, 4th International conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics, University of Missouri – Rolla,MO. Paper 6.1, 2001.

Ashour, M., Pilling, P., and Norris, G., "Updated Documentation of the Strain Wedge Model Program for Analyzing Laterally Loaded Piles and Pile Groups," Proceedings, 33rd Engineering Geology and Geotechnical Engineering Symposium, University of Nevada, Reno, pp. 177-178, 1998.

Ashour, M., P. A. Pilling, and G. M. Norris, "Documentation of the Strain Wedge Model Program for Analyzing Laterally Loaded Isolated Piles and Pile Groups," Proceedings, 32nd Symposium on Engineering Geology and Geotechnical Engineering, Boise, Idaho, March 1997.

Ashour, M., P. A. Pilling, G. M. Norris, and H. Perez, "Development of a Strain Wedge Model Program for Pile Group Interference and Pile Cap Contribution Effects," Report No. CCEER-96-4, University of Nevada, Reno, 1996.

Ashour, M., Norris, G., and Pilling, P., "Strain Wedge Model Capability of Analyzing Behavior of Laterally Loaded Isolated Piles, Drilled Shafts, and Pile Groups," Journal of Bridge Engineering, ASCE, Vol. 7, No 4, July/August 2002, pp. 245-354.

Ashour, M., Norris, G., and Pilling, P., "Lateral Loading of a Pile in Layered Soil Using the Strain Wedge Model," Journal of Geotechnical and Geoenvironmental Engineering, ASCE, Vol. 124, No. 4, April 1998, pp. 303-315

Norris, G. M., M. Ashour, P. A. Pilling, and P. Gowda, "The Non-Uniqueness of p-y Curves for Laterally Loaded Pile Analysis," Proceedings, 31st Symposium on Engineering Geology and Geotechnical Engineering, Logan, Utah, March 1995, pp. 40-53

Norris, G. M., P. K. Gowda, and P. A. Pilling. "Strain Wedge Model Formulation for Piles," Report No. CIS 91-11, University of Nevada, Reno, February 1993.

Pilling, P.A., "Assessing the Liquefaction Potential of Sand Deposits Containing an Appreciable Amount of Gravel." Program with Abstracts 2002 Annual Meeting Association of Engineering Geologists and American Institute of Professional Geologists, Reno, Nevada, July 2002, p35

Pilling, P. A., "The Response of a Group of Flexible Piles and the Associated Pile Cap to Lateral Loading as Characterized by the Strain Wedge Model," Doctoral Dissertation, University of Nevada, Reno, 1997.

Pilling, P.A., M. Ashour, and G.M. Norris, "Strain Wedge Model Hybrid Analysis of Laterally Loaded Pile Group," Journal of the Transportation Research Board, Transportation Research Record No. 1772, 2001, Paper No. 01-0174, pp. 115-121.

Pilling, P. A. and P. V. Woodward, "Dependent Facility Closure in California," Proceedings, Mine Closure: Creating Productive Public and Private Assets, Sparks, Nevada, March 1995, pp. 315-326.

Pilling, P.A. and Beeston, H. E., "Expansion Testing of Clay Soils in Forensic Investigations," Proceedings, 33rd Symposium on Engineering Geology and Geotechnical Engineering, Reno, Nevada, March 1998, pp. 119-127.

DECLARATION OF

Geoffrey Lesh

I, Geoffrey Lesh, declare as follows:

I am presently employed by the California Energy Commission in the Engineering Office of the Systems Assessments and Facilities Siting Division as a Mechanical Engineer.

A copy of my profess onal qualifications and experience is attached hereto and incorporated by reference herein.

I helped prepare the Hazardous Materials Section on July 8. 2003 for the MID Ripon project based on my independent analysis of the Small Power Plant Exemption and supplements thereto. data from reliable documents and sources, and my professional experience and knowledge.

It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

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. 7/14/03 Signed: Geoffrey Lesh

At: Sacramento, California

Geoffrey Lash, P.E
Mechanical Engineer

WORK HISTORY

California Energy Commission Mechanical Engineer 2002-Current
-- Review and analyze applicants' plans for safe management of hazardous materials, and for protecting worker safety.

Self-Employed Independent Investor 2000-2002
-- Wrote market analysis computer software and traded personal account.

Read-Rite Corp Wafer Engineering Manager 1994-2000
-- Designed and developed wafer manufacturing processes for computer data storage systems. Managed team of engineers and technicians responsible for developing wet and dry chemical processes for manufacturing, including process and safety documentation.
-- Managed process and equipment selection for manufacturing processes.
-- Processes included vacuum processed metals and ceramics, grinding-polishing, plating, etching, encapsulation,, process troubleshooting, and SPC reporting.

Dastek Corp (Komag Joint Venture Start-up) Wafer Engineering Manager 1992-1994
-- Developed wafer processes for new technology recording head for hard disk drives.
-- Managed team of engineers and technicians.
-- This position included start up of wafer fab, including line layout, purchase, installation, and startup of new process equipment, etc.

Komag, Inc Alloy Development Manager 1989-1992
--Developed new vacuum-deposited recording alloys
-- Responsible for planning and carrying-out tests, designing experiments, analyzing results, managing test lab conducting materials characterizations.
Extensive process modeling and data analysis.

Verbatim Corp (Kodak) Process Development Manager 1983-1989
-- Mechanical engineering for computer disk manufacturing, including product, process, and equipment including metal-ceramic-plastic processes for optical disk development.
-- Production processes included plating, metal evaporation, reactive sputtering, laser-based photolithography, injection molding.

IBM Corp Mechanical/Process Engineer 1977-1983
-- Product development for photocopiers and computer tape-storage systems.

EDUCATION

University of Santa Clara:	Certificate in Magnetic Recording Engineering
Stanford University, Master of Science Degree	Materials Science and Engineering
UC-Berkeley, Bachelor of Science Degree	Mechanical Engineering , Materials Science and Engineering (Double Major)

Registered Professional Engineer (Mechanical), California

DECLARATION OF

Rick Tyler

I, Rick Tyler declare as follows.

I am presently employed by the California Energy Commission in the Systems Assessments and Facilities Siting Division as an Senior Mechanical Engineer.

A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

I supervised the preparation of the staff testimony on Hazardous Materials Management and Worker Safety for the Modesto Irrigation District Electric Generation Project based on my independent analysis of the Small Power Plant Exemption and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge

It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

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: 7/28/03 Signed:

At: Sacramento, California

RICK TYLER

Associate Mechanical Engineer

CALIFORNIA ENERGY COMMISSION
430 Ashore Ave.
Sacramento, California 95831
(916) 392-1663

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 - Associate 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 pollutant 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 PRESENTATIONS 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

Mike Krolak

I, Mike Krolak declare as follows:

I am presently employed by the California Energy Commission in the Environmental Office of the Systems Assessments and Facilities Siting Division as a Planner II.

A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

I helped prepare the Initial Study on Hydrology and Water Quality for the Modesto Electric Generation Station project based on my independent analysis of the Small Power Plant Exemption and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

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: July 14, 2011 Signed: [signature]

At: Sacramento, California

Mike Krolak
Planner II

EDUCATION

Bachelor of Science, Environmental Resource Science (Hydrobiology Emphasis), University of California, Davis, 2000.

Technical Coursework in Hydrology, Aqueous Geochemistry, Soil Science, Ecology, Environmental Planning, Environmental Law and Policy.

PROFESSIONAL EDUCATION

Introduction to Groundwater, National Ground Water Association, January 2001.

EXPERIENCE

April 2002 to Present
Planner II. California Energy Commission, Systems Assessment and Facilities Siting Division, Environmental Protection Office

Provide analysis in a similar capacity to Planner I duties; however, Planner II duties often include more complex projects.

April 2001 to April 2002
Planner I. California Energy Commission, Systems Assessment and Facilities Siting Division, Environmental Protection Office

Organize, research, and analyze soil and water resource data associated with the siting of power generation facilities. Identify issues, impacts and mitigation measures. Oversee and coordinate the actions of consultants in gathering, organizing and analyzing soil and water resource data associated with the siting of power generation facilities. Coordinate with local governments, resource protection agencies, environmental organizations and business organizations. Participate in workshops and meetings concerning Commission projects and programs. Evaluate existing and proposed laws, ordinances, regulations, standards, and policies pertinent to the soil and water resources aspect of proposed energy facilities. Perform written assessments of energy related documents.

November 2000 to April 2001
Energy Analyst. California Energy Commission, Energy Facilities Siting & Environmental Protection Division, Environmental Protection Office.

Provide assistance in gathering, organizing and analyzing water and soil resources data and identification of issues, impacts and mitigation measures. Assist in coordinating with local governments, resource protection agencies, environmental

organizations and business organizations. Participation in workshops and meetings concerning Commission projects and programs. Evaluation of existing and proposed laws, ordinances, regulations, standards, and policies pertinent to the water and soil resource aspect of proposed energy facilities. Perform written assessments of energy related documents.

January 2000 to August 2000

Student Assistant. California Energy Commission, Energy Facilities Siting & Environmental Protection Division, Environmental Protection Office.

Assisted in gathering and preliminary analysis of water and soil resource data used by staff in siting analyses. Assisted in evaluation of laws, ordinances, regulations and standards pertinent to water and soil resources.

June 1996 to September 1998

Summer Intern. Marin Municipal Water District. Water Quality Laboratory.

Assisted in field collection and lab analysis of water samples, of both treated and source waters. Assisted in lake water quality treatments and in developing a lake treatment schedule. Investigated consumer water quality complaints.

DECLARATION OF
David Flores

I, David Flores declare as follows:

1. I am presently employed by the California Energy Commission in the Siting Office of the Energy Facilities Siting 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 prepared the staff testimony on Land Use for the Modesto Irrigation District's Ripon Generation Station (03-SPPE-1), based on my independent analysis of the Small Power Plant Exemption 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: July 14, 2003 Signed: _____

At: Sacramento, California

DAVID FLORES

WORK EXPERIENCE

Sept. 1998 to Present — **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, visual and traffic and transportation resources. Specific tasks include the analysis of potential impacts, identification of suitable mitigation measures, preparation of testimony, and project monitoring to ensure compliance with local, state and federal environmental laws and regulations.

March 29,1988 to September 12, 1996 — **Senior Planner.** County of Yolo Planning and Public Works Department

Senior Planner - Current and Advanced Planning (Resources Management and Planning)

Present responsibilities include the following:

Administer 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

PLANNING ACHIEVEMENTS

- Principal staff involved in development of the County Right to Farm and Williamson Act/ Blue Ribbon Ordinances
- Staff liaison to citizen committees for the communities of Yolo County
- Substantial experience in working successfully with community organizations and committees on controversial projects
- Responsible for the administration of the California Environmental Quality Act (CEQA) for all matters going before the Planning Commission and Board of Supervisors.

EDUCATION

California State University @ Sacramento
University of California @ Davis
Major: Environmental Studies
Minor: Business Administration

Continuing education has included: Writing for Managers, CEQA Updates, Managing the Office, CEQA Update, Subdivision Map Act, General Plan Update

DECLARATION OF
RAMESH SUNDARESWARAN

I, Ramesh Sundareswaran declare as follows:

I am presently employed by the California Energy Commission in the Environmental Office of the Systems Assessments and Facilities Siting Division as a Health & Safety Program Specialist.

A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

I helped prepare the Initial Study on Waste Management and Public Health for the MEGS project based on my independent analysis of the Small Power Plant Exemption and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

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: 7-16-03 Signed: S. R.

At: Sacramento, California

RAMESH SUNDARESWARAN

SUMMARY

Over 16 years of progressively responsible experience in management, organizational, technical and policy areas related to energy, urban environmental management and planning, pollution control and chemical engineering. Consulting experience, government experience, and teaching experience. Experience in the development of strategic approaches to problem resolution. Ability to integrate multidisciplinary approaches to problem-solving. Capacity to enlist management and working group support and participation in solving problems. Ability to work in stressful environments. Ability to explain technical issues to non-technical audiences. Substantial project development and management experience.

EMPLOYMENT

5/00-present *Specialist (California Energy Commission, Sacramento, CA)*
Provided first-line advice and input to upper management on the feasibility, impacts, or potential public health and safety issues on a variety of operations, projects, or proposals related to energy resource development and utilzation. Authored various independent analyses findings and opinions. Audited and monitored projects for compliance.

12/97-5/00 *Associate (Water Resources Control Board, Oakland, CA)*
Performed a wide variety of consultative, advisory and evaluative duties in pollution prevention and mitigation of impacts on water resources. Provided oral and written testimonies to upper management.

6/92 -12/97 *Senior Engineer (BPS Inc., Torrance, CA)*
Developed, planned, coordinated and executed various projects in the areas of environmental mitigation, pollution prevention and control, regulatory compliance and end-of-pipe treatment for media such as air, surface water, groundwater, wastewater, soil and man-made structures and different pollutants. Directed staff in the preparation of workplans, reports, process designs, bids and specifications for various projects. Liaised with governmental agencies and negotiated environmental permits and variances for clients. Advised clients on regulatory interpretations. Testified as fact and expert witness in environmental litigations. Oversight and supervision of staff, subcontractors and vendors in completion of projects. Responsible for business development and also technical and cost proposal writing.

4/90-6/92 *Project Manager (Dames & Moore, Santa Ana, CA)*
Served as technical lead and also provided team for a wide spectrum of environmental and engineering projects. Oversaw projects for technical, quality and financial performance.

8/88-4/90 *Project Manager (JKB Associates, Carson, CA)*
Provided management and technical support for various environmental projects. Controlled project budget/schedule/performance. Procured, set up and managed contracts and interfaced with governmental agencies and management.

6/88-8/88 *Hazardous Waste Specialist (Orange County Health Care Agency, Santa Ana, CA)*
Rendered regulatory oversight for various projects to protect public health and environment. Involved in policy-making and development of environmental regulations.

1/87-6/88 *Instructor (US Environmental Protection Agency(USEPA)Air Pollution Training Institute, San Luis Obispo, CA)*
Taught various air pollution courses to both industry and government. Assisted course director in program administration.

OTHER EMPLOYMENT

Marketed corrosion mitigation technologies to the oil and gas industries for over 6 years.

EDUCATION

1987-1988 Master of Engineering, Environmental Engineering
1980-1982 Master of Business Administration
1974-1979 Bachelor of Chemical Engineering

PROFESSIONAL AFFILIATIONS

- US Environmental Protection Agency's (EPA) Accident Release Prevention Requirements peer reviewer
- Expert panel member on USEPA's solvent extraction treatability testing guidance document
- World Environment Center
- Registered Environmental Assessor, State of California (in progress)

COMPUTER SKILLS

Conversant with various Windows Operating systems, MS Office, Novell Groupwise and other related software.

DECLARATION OF
Amanda Stennick

I, Amanda Stennick declare as follows:

1. I am presently employed by The California Energy Commission in the **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 prepared the staff testimony on **Socioeconomics** for the **Ripon MID SPPE Project** based on my independent analysis of the Small Power Plant Exemption 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: July 14, 2003 Signed: Amanda Stennick

At: Sacramento, CA

AMANDA STENNICK

EDUCATION

B.A. 1986 University of California, Davis, Urban and Economic Geography

WORK EXPERIENCE

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 suitable mitigation measures, preparation of testimony, and project monitoring to ensure compliance with local, state and federal environmental laws and regulations. Recent work includes participation in the environmental justice task force, and 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; ongoing demographic research for environmental justice issues in siting cases.

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 impacts, identification of suitable mitigation measures, preparation of testimony, and project monitoring to ensure compliance with local, state and federal environmental laws and regulations. Recent work includes participation in the environmental justice task force, and 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; ongoing demographic research for environmental justice issues in siting cases.

1992 to 1993 **Environmental Analyst/Planner.** Beak Consultants

- Environmental Planner for EIR/EA for the Mammoth County Water District, involving the analyses of potential impacts resulting from lake water transfers and maintenance of instream flows in the Mammoth Lakes Basin. Prepared land use, socioeconomics,

recreation, and public services and utilities sections of EIR/EA.

- Environmental Planner for an Effluent Treatment Plant EIR for Simpson Paper company. Prepared land use, socioeconomics, recreation, public services and utilities, cumulative impacts sections, and mitigation monitoring.

- 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; compliance with federal, state, and local plans and policies.

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 a Specific Plan for 80-acre Mixed Use/Water Related development; and 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; 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 as 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.

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. Coordinate work efforts with the CEC, SMUD, and PG&E to develop environmental and siting policies for energy facilities and transmission lines, identify environmental impacts and appropriate mitigation measures.

1987 to 1989 **Planner/Assistant Planner.** Yolo County Community Development

- Planning liaison for Homestake Mining Company's (HMC) McLaughlin Mine. Conducted meetings on the Technical Review Panel's environmental monitoring of HMC's McLaughlin Mine, and

prepared staff reports on the implementation of use permit phasing, regarding issues of water quality, and impacts of the tailings pond on biologic resources. Specific tasks included site visits to monitor the revegetation plan and other mitigation measures as specified in the use permit; oral and written presentations 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)

PROFESSIONAL AFFILIATIONS

Association of Environmental Professionals
American Planning Association

DECLARATION OF
James S. Adams

I, James S. Adams declare as follows:

1. I am presently employed by the California Energy Commission in the Siting Office of the Energy Facilities Siting and Environmental Protection Division as an Environmental Planner.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on Traffic and Transportation for the Initial Study for the Modesto Irrigation District's Ripon Generation Station (03-SPPE-1), based on my independent analysis of the Small Power Plant Exemption 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: July 14, 2003 Signed: _____

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 governmen: agencies in various projects related to the enhancemont 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 I 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 natura· 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.

Academ c
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:

I am presently employed by the California Energy Commission in the **Environmental Protection Office** of the Systems Assessments and Facilities Siting Division as a **Staff Toxicologist**.

A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

I helped prepare the staff testimony on **Transmission Line Safety and Nuisance** for the **Modesto Irrigation District Electric Generation Station Project** based on my independent analysis of the Small Power Plant Exemption and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

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: July 17, 2008 Signed: O. 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

Al McCuen

I, Al McCuen declare as follows:

1. I am presently employed by the California Energy Commission in the Engineering Office of the Systems Assessments and Facilities Siting 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 Modesto Irrigation District Electric Generation Station based on my independent analysis of the Small Power Plant Exemption 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: July 28-03 Signed: Al McCuen

At: Sacramento, California

Albert A. McCuen
SENIOR ELECTRICAL ENGINEER

Education

A.S., Electronic Engineering, College of the Siskiyous, Weed, CA
B.S., Electrical Engineering, California State University, CA

Professional Background

1990 to present--Senior Transmission Planner for Regulatory Transmission Engineering, Electrical Engineering, and Transmission System Evaluation. Special consultant for Transmission Safety and Nuisance discipline.

1987 to 1989--Supervisor of Transmission Evaluation Unit for Transmission Safety and Nuisance, Electrical Engineering, Transmission Engineering and Transmission System Evaluation technical disciplines.

1978 to 1987--Transmission System Program Specialist/Health and Safety Program Specialist, California Energy Commission (CEC), Siting and Environmental Division.

Expert witness for the Commission's power plant approval process and Commission staff transmission planner. Major assignments in transmission engineering and transmission system planning. Duties emphasize determination of the adequacy, acceptability and relative merit of applicant proposals for major transmission facilities (and staff proposed alternatives) in consideration of economics, reliability, conformance with transmission system planning criteria and coordination of regional transmission and generation facilities. Major assignments have also included scoping macro transmission policies for California, Developing Commission transmission system planning regulations and guidelines, developing common forecasting methodology for transmission system planning utility reporting.

1977 – 1978--Manager, Transmission Line Effects Section, CEC, Compliance and Safety Office.

Research, analysis and evaluation of public health, safety and nuisance concerns for transmission lines. Duties included engineering calculations of transmission line electrical effects, review and assessment of technical publications and health, safety and nuisance standards.

1976 – 1977--Energy Facility Siting Planner, CEC, Compliance and Safety Office

Research and evaluation of existing material and health and safety standards applicable to thermal power plants and transmission lines. Responsible for coordination of expert witness to testify at hearings, preparation of cross examination questions, analysis of impact of effects and preparation of staff summary reports on Notice of Intent(s) and hearing testimony.

1969 – 1976--Electrical Engineering, Private firm - Electrical, Mechanical and Systems Engineering Construction Contractor. Engineering duties and coordination responsibilities for the construction of power plants, switchyards, power lines, industrial buildings and process control systems. Responsible for code and specification interpretation and compliance, design, project cost estimates and installation.

DECLARATION OF
LAIPING NG

I, Laiping Ng declare as follows

1. I am presently employed by the California Energy Commission in the Engineering Office of the Systems Assessment & Facilities Siting 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 MID Electric Generation Station project based on my independent analysis of the Application for Small Power Plant Exemption 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: 7/14/2003 Signed: Laiping Ng

At: Sacramento, California

Laiping Ng
Associate Electrical Engineer

Education:

Master of Science: Electrical Engineering - Power
California State University, Sacramento. December 1997.

Bachelor of Science: Electrical Engineering - Power
California State University, Sacramento. May 1991.

Power Certificate – EPRI, May 1991

Experience:

April 1999 – Present:

- Review and evaluate electrical transmission system sections of the application to ensure that the transmission engineering aspects of the power plant, switchyards, substations, and the related facilities comply with applicable laws, ordinances, regulations, and standards (LORS).

- Prepare written analysis, which address the issues of the adequacy of proposed projects to meet applicable LORS.

- Perform load flow studies and fault analysis.

- Coordinate with CAISO, WSCC and other regulatory agencies and coordinate with utilities companies in the review and evaluation of the power plant siting process.

May 1991 – April 1999:

- Prepared engineering bid specifications for recommended lighting and HVAC projects. Evaluated contractor bids and recommended contractors to customers. Reviewed RFPs and RFQs. Evaluated, selected, and managed engineering consultants. Administrated and coordinated contracts.

- Designed electrical systems for indoor and outdoor lighting and lighting controls. Assisted in design cooling systems and controls for school buildings and office buildings. Reviewed and checked electrical lighting designs and drawings. Analyzed designs and made recommendations for effective actions

- Performed facility energy audits and field surveys on schools, offices, hospitals and county jail facilities to identify energy efficiency improvements and cost estimate with respect to lighting and HVAC systems. Inspected lighting and HVAC system equipment installation.

- Worked with regulatory agencies to conduct day-to-day basis works such as participated in Nonresidential Energy Efficiency Standards development teams. Prepared and updated Standards concentrating on interior building illumination and indoor and outdoor flood lighting.

DECLARATION OF
Eric Knight

I, Eric Knight declare as follows:

1. I am presently employed by the California Energy Commission in the Environmental Office of the Systems Assessments and 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 Visual Resources, for the MID Electric Generation Station Project based on my independent analysis of the Application for Small Power Plant Exemption 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: 7-10-03 Signed: [signature]

At: Sacramento, California

ERIC KNIGHT

Planner II

EDUCATION

BA – Environmental Studies, California State University, Sacramento, 1993
Minor - Government, CSUS, 1993

PROFESSIONAL EDUCATION

CEQA Workshop, Association of Environmental Professionals, February 1999
CEQA Overview and Update, UC Davis Ext. Program, June 1998
Land Use Planning for Environmental Professionals, UC Davis Ext., May 1996
Introduction to ArcView and Avenue (GIS), ESRI, August 1995 and May 1998

EXPERIENCE

June 2000 to present
California Energy Commission, Systems Assessment & Facilities Siting Division, Environmental Protection Office
Planner II (Planner I between 10/98 – 6/00)

Responsible for conducting, or overseeing the development of, independent analyses of the potential visual, land use, and traffic impacts of power plant proposals. Other responsibilities include reviewing applications for data adequacy, participating in workshops with applicants and the public, preparing written testimony, and presenting testimony at hearings.

June 1995 – October 1998
California Energy Commission, Energy Facilities Siting & Environmental Protection Division, Engineering Office
Energy Analyst/Planner I

Helped to advance local governments' use of urban planning tools. Developed a GIS database and analytical tool for a community-planning project in San Diego. Authored a chapter to the National Wind Coordinating Committee's *Permitting of Wind Energy Facilities: A Handbook*. Helped to write, edit and review various Energy Commission publications.

June 1994 – June 1995
Department of Toxic Substances Control, California EPA
Program Technician
(Student Assistant: March 1993 – January 1994)

Provided regulatory assistance to hazardous waste generators, transporters and storage facility operators.

January 1992 – June 1992
Sacramento Valley Toxics Campaign
Student Intern

Filed public record requests with state and federal agencies. Conducted research and authored an article for the campaign newsletter. Helped to organize community meetings, press conferences and public outreach events.

DECLARATION OF
Ila Lewis

I, Ila Lewis declare as follows:

1. I am presently employed by the California Energy Commission in the Compliance Office of the Energy Facilities Siting and Environmental Protection Division as a Compliance Project Manager.

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 **General Conditions** for the MID Modesto Electric Generation Station Project based on my independent analysis of the Small Power Plant Exemption 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: July 14, 2003 Signed: Ila Lewis

At. Sacramento, California

ILA LEWIS
PLANNER II

EXPERIENCE:

May 2001 to present	California Energy Commission – Energy Facilities Siting and Environmental Protection Division
	Compliance Project Manager -- Oversee the construction and operation activities of energy facilities. With assistance from the division's technical staff, ensure that project owners comply with the conditions of certification. Serve as team leader in the processing of post-certification amendments, complaints and facility closures. Work with the Siting Project Manager to review conditions of certifications. Serve as team leader for all compliance monitoring activities.
June 2000 to May 2001	California Integrated Waste Management Board – Waste Prevention and Market Development Division
	Integrated Waste Management Specialist -- Responsible for implementing California's plastic recycling laws, and developing and expanding markets for postconsumer resin in California.
June 1991 to June 2000	California Integrated Waste Management Board– Diversion Planning and Local Assistance Division
	Integrated Waste Management Specialist - Local Assistance Branch – Assist with developing and reviewing waste management planning documents for cities and counties in Northern California.
	Public Diversion Assistance Section – Assist State offices/institutions and school districts in most rural counties in California with implementation and management of their waste diversion/prevention programs
Jan. 1985 to June 1991	California Energy Commission -
	Energy Analyst: Energy Technology Division – Performed technical/economic evaluations, and researched/analyzed alternative fuels. Energy Technology Export Program: Information transfer/management activities, conducted international visitor liaisons and assisted with reverse trade missions
	Management Services Technician: State Schoolbus Clean Fuel Efficiency Demonstration Program. Assistant Project Manager for the Energy Development Report
	Project Secretary – Provided support for the power plant siting application process.
Oct. 1990 to March 1991	Education for Democracy: Instructor, English as a Second Language, for two energy companies in Slovakia.
EDUCATION:	California State University, Sacramento, B.A. Social Science, 1981. University of California, Davis – Currently enrolled in TESOL certification program.