NP--7900104

TI87 900104

SECOND PHASE REPORT
ON
IDENTIFICATION OF ENVIRONMENTAL ISSUES
HYBRID WOOD-GEOTHERMAL POWER PLANT
WENDEL-AMEDEE KGRA
LASSEN COUNTY, CALIFORNIA

MASTER

PREPARED FOR: GEOPRODUCTS CORPORATION
1330 Broadway
Oakland, California 94612

PREPARED BY: GENNIS AND ASSOCIATES, ENGINEERS
A Division of George S. Nolte and Associates
1812 14th Street
Sacramento, California 95814

JOB NUMBER: 8008-08, 2030-80-33

DATE: August 14, 1981

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

ELB

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency Thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

DISCLAIMER

Portions of this document may be illegible in electronic image products. Images are produced from the best available original document.

TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
INTRODUCTION	
BACKGROUND	
I. OVERVIEW OF PERMITTING PROCESS	I-1
A. GENERAL COMMENTS	I-1
B. CALIFORNIA ENVIRONMENTAL AND PERMIT REVIEW PROCESS	I-2
C. STATE DEVELOPMENT PERMITS	I-2
D. RESPONSIBLE AGENCY PERMITS AND APPROVALS	I-3
E. PROJECT AND SITE-SPECIFIC CONSIDERATIONS	I-4
F. AGENCY PERMITS, AUTHORIZATIONS, APPROVALS OR CERTIFICATIONS	I-5
II. ENVIRONMENTAL DATA REQUIREMENTS - AIR RESOURCES	II-1
A. INTRODUCTION AND GENERAL COMMENTS	II-1
B. NEED FOR METEOROLOGICAL MONITORING	II-4
C. NEED FOR AIR QUALITY MONITORING	II-5
D. NEED FOR AIR QUALITY IMPACT ANALYSIS	II-7
E. CALIFORNIA ENERGY COMMISSION APPLICATION INFORMATION REQUIREMENTS	II-10
III. ENVIRONMENTAL DATA REQUIREMENTS - VEGETATION AND WILDLIFE	III-1
A. INTRODUCTION AND GENERAL COMMENTS	III-1
B. THE NEED FOR NEW ENVIRONMENTAL DATA	III-1
IV. ENVIRONMENTAL DATA REQUIREMENTS - GEOTECHNICAL ENVIRONMENT	IV-1
A. INTRODUCTION AND GENERAL COMMENTS	IV-1
B. NEED FOR NEW ENVIRONMENTAL DATA	IV-1
V. ENVIRONMENTAL DATA REQUIREMENTS - SURFACE WATERS AND SOLID WASTE	V-1
A. INTRODUCTION AND GENERAL COMMENTS	V-1
B. NEED FOR NEW ENVIRONMENTAL DATA	V-1
VI. ENVIRONMENTAL DATA REQUIREMENTS - CULTURAL RESOURCES	VI-1
A. INTRODUCTION AND GENERAL COMMENTS	VI-1
B. NEED FOR NEW ENVIRONMENTAL DATA	VI-1

TABLE OF CONTENTS
(Continued)

<u>SECTION</u>	<u>PAGE</u>
VII. ENVIRONMENTAL DATA REQUIREMENTS - PUBLIC HEALTH, INDUSTRIAL HYGIENE AND NOISE	VII-1
A. INTRODUCTION AND GENERAL COMMENTS	VII-1
B. NEED FOR ENVIRONMENTAL DATA	VII-2
VIII. LAND USE AND SOCIO-ECONOMIC FACTORS	VIII-1
A. INTRODUCTION AND GENERAL COMMENTS	VIII-1
B. NEED FOR NEW ENVIRONMENTAL DATA	VIII-1
IX. SCHEDULING AND BUDGETS	IX-1
A. PERMITTING SCHEDULES	IX-1
B. PERMITTING COSTS	IX-3
X. APPENDIX	X-1

LIST OF TABLES

<u>TABLE</u>		<u>PAGE</u>
TABLE I-1	AGENCY PERMITS, AUTHORIZATIONS, APPROVALS OR CERTIFICATIONS	I-7
TABLE II-1	MINIMUM CONTENTS OF A MONITORING PLAN	II-2
TABLE IX-1	ESTIMATED COSTS OF PREREQUISITE ACTIVITIES ALLOCATED TO PERMITTING	IX-4
TABLE IX-2	TYPICAL AIR MONITORING STATION	IX-4a
TABLE X-1	CONTENTS OF APPLICATION FOR EXEMPTION	X-1a
TABLE X-2	SUMMARY OF AIR RESOURCE ENVIRONMENTAL INFORMATIONAL NEEDS	X-2a

LIST OF FIGURES

FIGURE

PAGE

FIGURE 5-3	PROJECT SCHEDULE	IX-1a
FIGURE IX-1a	PERMITTING SCHEDULE ALTERNATE A	IX-1b
FIGURE IX-1b	PERMITTING SCHEDULE ALTERNATE B	IX-1c
FIGURE IX-2	SCHEDULE FOR OBTAINING A SMALL POWER PLANT EXEMPTION	IX-2a

INTRODUCTION

BACKGROUND

GeoProducts Corporation and the California Department of Water Resources have jointly proposed to develop a 55 MWe power plant in Lassen County, California. The proposed power plant is unique in that it will utilize geothermal heat and wood fuel to generate electrical power, the first attempt to utilize these resources together on a commercial scale.

GeoProducts Corporation, in a contract dated November 12, 1980, with Gennis and Associates, a Division of George S. Nolte and Associates, has authorized preparation of a study to identify environmental issues and constraints which may impact the proposed hybrid wood-geothermal power plant. Phase One of this study covered the following three tasks:

Task One:

Identify, review and evaluate environmental requirements under Federal, State and local statutes and guidelines as they relate to the project.

Task Two:

Perform a literature search of existing environmental data pertaining to the area and the project, and prepare a bibliography with abstracts of this data.

Task Three:

Identify sensitive environmental issues pertaining to the project.

This Phase Two report covers the following tasks:

Task Four:

Identify requirements for new environmental information that must be generated for permit applications and for preparation of environmental documents required by CIOA and NEPA.

Task Five:

Prepare a schedule for generating new environmental data, for preparing and submitting permit applications, and for obtaining permits.

Task Six:

Develop a budget for permitting, licensing and environmental assessments as required by applicable laws, regulations and procedures.

Task Seven:

Investigate the steps needed to qualify for a Small Power Plant Exemption by the State Energy Commission.

I. OVERVIEW OF PERMITTING PROCESS

A. GENERAL COMMENTS

Activities which constitute a "project" under CEQA and thus trigger an environmental determination include power plant siting and geothermal well drilling, plus special use permits where required at the local agency level. The California Energy Commission (CEC) is the lead agency under CEQA for power plant siting. The California Division of Oil and Gas (CDOG) is the lead agency for exploratory geothermal well drilling. (Exploratory is defined as drilling up to six wells more than 1/2 mile from a proven commercial well, for the purpose of confirming a geothermal resource.) The County of Lassen is the lead agency for any special use permits required at the County level.

CEC regulations for certification of power plants are different for "thermal" and "geothermal" power plants. CEC procedures for considering an NOI (Article 2, §1721, et. seq.) or an AFC (Article 3, §1741, et. seq.) are the same for thermal and geothermal power plants. Additional provisions are stipulated regarding geothermal NOI's and AFC's (Article 4, §1801 et. seq.) to promote the accelerated development of economically feasible and environmentally acceptable geothermal power plants. The major differences are an 18 month certification process for geothermal vs. 24 months allowed for the processing of the NOI and AFC for thermal plants.

In addition to the reduced time schedule for review of geothermal plants, the degree of detail required and intensity of review are increased. This additional concern with regard to geothermal plants is apparent in the necessity to extend considerations to the geothermal resource and electrical transmission facilities. Additional environmental considerations and justification of plant siting, design and construction are apparent in the more specific information required of geothermal applications (Appendices A, B and C of Article 4) than that required of applications for thermal plants (Appendices A and B of Article 1).

The California Energy Commission (CEC) has indicated that the proposed hybrid wood-geothermal power plant will be treated as a "thermal" power plant (Letter from John Geesman, Executive Director, CEC, dated February 10, 1981). Any thermal power plant with a generating capacity of 50 megawatts or higher is under CEC jurisdiction and must be certified by the commission prior to beginning construction (Public Resources Code, Section 25120). If a proposed thermal power plant's generating capacity is under 100 MW, the proponent can apply for a Small Power Plant Exemption (Public Resources Code, Section 25541). Unlike a Commission Certificate, a Small Power Plant Exemption does not supercede local, state or regional laws or permitting processes. CEC procedures deal with the site location of the power plant.

It is possible to bypass the CEC completely if it can be shown to that agency's satisfaction that the net generating capacity is less than 50 MW. An advantage of utilizing the Small Power Plant Exemption procedure is that since a finding of no substantial adverse environmental impacts must be made, a Negative Declaration may be appropriate as the environmental document in connection with plant siting. However, this is less important now that the CEC's power plant site certification program has been certified by the California Secretary for Resources as functionally equivalent to an EIR.

The stated purpose of providing for Small Power Plant Exemptions is in accordance with the policy of the California Energy Commission in Title 20, Chapter 20, Subchapter 5, Article 7, Section 1934:

Article 7. Small Power Plant Exemptions

1934. Statement of Purpose. It is the policy of the State Energy Resources Conservation and Development Commission to promote the development of electric energy supply technologies that prudently conserve and economically use energy resources. Utilization of waste heat from existing industrial facilities to generate electricity and utilization by industries of waste heat from power plants are two such technologies, which are presently available. A major purpose of these regulations is to encourage the use of those technologies by expediting the procedures necessary for the approval of waste heat utilization plans and other energy efficient technologies. It is an additional purpose of these regulations to promote the experimentation with, and development of, alternate sources of electric generation.

Note: Authority cited: Sections 25213 and 25218(e), and 25539, Public Resources Code. Reference: Sections 25500-25542, Public Resources Cod.

History: 1. Renumbering from Article 4 (Sections 1824-1838) to Article 7 (Sections 1934-1948) filed 11-22-78; effective thirtieth day thereafter (Register 78, No. 47). For history of former Article 4, see Registers 77, No. 4; and 76, No. 14.

This policy of the CEC reflects the State policy of the Warren-Alquist State Energy Resources Conservation and Development Act, PRC §25000, et. seq.

Procedures pursuant to the Small Power Plant Exemption are somewhat unclear because of the CEC's lack of experience with comparable power plant projects.

Time wise, the requirement for a decision on an application for exemption within 135 days (CAC §1946) is a notable reduction from the sequential process stipulated for an NOI, 12 months (PRC §25516.6) and an AFC, 18 months (PRC §25522) or even the "accelerated" 12-month AFC process (PRC §25540.6).

Cost savings may also be expected from the less complex and detailed contents required in an application for exemption (CAC §1934); the expeditious review and limited hearings (CAC §1943-1945); and requirement for a decision within 135 days (CAC §1946). Even the number of copies, 50, of the application for an exemption (CAC §1939) are less than the 150 copies required of NOI's and AFC's (CAC §1706).

Although the language of the CEC regulations is being simplified in the revisions presently being contemplated, the complexity and degree of detail required of NOI's and AFC's have not been altered. The information requirements for a 12-month AFC have not been substantially reduced from the substantial detail required of the sequential NOI-AFC documentation.

In summary, the reduced complexity and detail of an application for exemption, limited procedural hearings and reduced time to a decision must result in a savings of time and cost over alternative NOI-AFC proceedings. Furthermore, the resulting Negative Declaration with regard to environmental considerations is as authoritative to local agencies as a full EIR financed by the applicant (PRC §25519(c)).

The required contents of an Application for Exemption are indicated in CEC regulations §1937. The Contents of Application for Exemption, Table X-1, illustrate the subject matter and sequence of presentation anticipated of an actual submission. The Introduction would be in the manner of an executive summary of the subsequent chapters wherein each of the areas are treated in more detail.

The Public Utility Regulatory Policies Act of 1978 (PURPA), one of five parts of the National Energy Act, provides that small power producers are exempt from state and Federal utility regulation as of March 20, 1981. Small power producers in the context of this act are those generating less than 80 MWe. They must also employ renewable resources such as geothermal energy, or use biomass or waste as a primary fuel.

B. CALIFORNIA ENVIRONMENTAL AND PERMIT REVIEW PROCESS

The Permit Streamlining Act (Statutes of 1977, Chapter 1200, also known as AB884) and the California Environmental Quality Act (CEQA) require public agencies to follow a standardized process for reviewing and making decisions on permit applications. The "permit application" or "Application for Permit" referred to is any such permit requested by a governmental agency in California. The objective of the Permit Streamlining Act is to require public agencies to follow a standardized process and to finish their reviews and make their decisions on permit applications within strict time limits.

1. Application

A permit application is filed with the appropriate "lead agency" according to an adopted list of required information, often simply a form application.

Within 30 calendar days after receiving an application, the lead agency must inform the applicant in writing whether the application is complete and accepted for filing or is deficient, specifying additional required information. In the absence of agency notification, the application is deemed complete and accepted 30 days after being received.

2. Agency Review

Upon acceptance of the application, the lead agency prepares or has prepared an "initial study" of the project's likely environmental impacts of the project according to CEQA.

Within 45 days of its acceptance, the lead agency must decide, after consulting with responsible agencies, whether to prepare a Negative Declaration, that there are no significant environmental effects, or an Environmental Impact Report (EIR).

A Notice of Preparation of a Draft EIR is used to notify other agencies of the intention to prepare an EIR, and requesting comments on the Notice, within 90 days of the application's acceptance.

If appropriate, a Negative Declaration must be prepared and public review completed within 105 days of accepting the application.

3. Agency Decision

After public and agency reviews, the lead agency must adopt a Final EIR or Negative Declaration. The agency must reach a decision on the permit within 365 days after accepting the application.

C. STATE DEVELOPMENT PERMITS

1. There are three basic types of state development permits:

- a. Type I applies to all development activities which occur in specific areas of the state, for example where Coastal Commissions or Tahoe Planning Agencies require permits.
- b. Type II applies to developmental activities which affect a specific natural resource such as a wildlife habitat or air quality.
- c. Type III applies to specific development activities.

2. To determine the type of state development permit applicable, consider:

- a. Project location - Type I geographic areas include the following (which are not applicable to this project):
 - From 3 miles offshore to 1,000 yards inland.
 - San Francisco, San Pablo and Suisun Bays
 - Lake Tahoe Watershed
 - Floodways in the Central Valley
- b. Resources affected - Type II natural resources include the following (which could be applicable to this project):
 - Air quality, in defined Air Basins or Districts
 - Water quality, in streams, lakes, etc., affecting fish and wildlife habitat
 - Land use, pollutant discharge or other activities affecting surface or groundwater quality.

c. Activities involved - Type III listed activities include the following (which are applicable to this project):

- Power plants and transmission lines
- Timber harvesting
- Construction or expansion of solid waste facilities
- Geothermal development

D. RESPONSIBLE AGENCY PERMITS AND APPROVALS

Virtually all development projects require some type of specific approval; that is, one or more permits from "responsible agencies" other than the lead agency.

Responsible agencies are governed by rules similar to those governing the lead agency. Notification of application acceptance or deficiencies must be given within 30 days, but a decision on an application must be given within 180 days of accepting the application.

If the lead or any responsible agency fails to give a permit decision within the specified deadlines (365 days and 180 days respectively), the permits are automatically approved. Each responsible agency must consider the lead agency's environmental document when evaluating a permit application. If complete permit applications are filed with each responsible agency before or immediately after a lead agency's decision, the maximum time required to obtain all approvals is 18 months. However, both permit evaluation and the environmental review process may run concurrently rather than consecutively to obtain approvals within the lead agency's one-year limit.

E. PROJECT AND SITE-SPECIFIC CONSIDERATIONS

The types of state development permits required are determined by the following characteristics of the subject project:

1. Location

The proposed project is located in the Wendel-Amedee KGRA and adjacent to the Lassen and Plumas National Forests. Although the Lassen County General Plan and zoning ordinance may be involved, no Type I geographic areas requiring special permits need be considered.

2. Resources

The wood fuel resource will be derived from sources within a 100-mile radius of the power plant. The as-yet-undefined specific areas will presumably include Federal and State regulated lands as well as private property.

- The geothermal resource will be derived from wells.

- Development of each energy resource may affect the natural resources requiring Type II permits; however, each energy resource may incur the preemptive concern of agencies involved with Type III activities.

3. Power Plant

- a. Type - The proposed power plant is a development prototype to demonstrate commercial feasibility of a hybrid geothermal-wood residue power plant.
- b. Fuel - Dried wood residue from forest timber cutting and range land clearing will be burned in a conventional boiler.

Geothermal fluids will be used for dehydration of the wood fuel and for preheating combustion air and feedwater.

- c. Size - The proposed power plant will provide a 50 MWe net electrical energy output from a nameplate-rated 55 MWe steam turbine generator. At an 85% plant capacity factor, 1,000 tons of dried wood will be required per day. Approximately one million pounds of geothermal fluid will be required per hour.

4. Environment

Environmental concerns that will be evaluated during the permitting review and determination of decision are discussed in Section II of this report.

F. AGENCY PERMITS, AUTHORIZATIONS, APPROVALS OR CERTIFICATIONS

The agencies listed in Table I-1 may issue permits, authorizations, approvals or certifications for, or have an interest in geothermal resources and wood fuel resources for the proposed GeoProducts/DWR Hybrid Power Plant Project.

The following agencies may issue permits, authorizations, approvals or certifications relative to power plant siting:

TABLE I-1

AGENCY PERMITS, AUTHORIZATIONS, APPROVALS OR CERTIFICATIONS

INTERESTED AGENCIES: GEOTHERMAL RESOURCE

a. California Division
of Oil and Gas (DOG)

The California Division of Oil and Gas is the Lead Agency for geothermal exploratory projects. The State Oil and Gas Supervisor is responsible for supervising the drilling, operations, maintenance and abandonment of geothermal resource wells.

Title 14, Div. 2,
Chapter 2, Sections
1681, et. seq., PRC
Section 3715.5.

Permit to Drill Geothermal Well: Upon application for a geothermal exploratory project the DOG shall prepare required environmental documents and make a decision on the project in 135 days or less.

Title 40, Div. 2,
Chapter 4, Sections
1941, et. seq., PRC
Section 3703, et. seq.

Environmental Impact Report (EIR) or Negative Declaration: Environmental documentation may be an Environmental Impact Report (EIR) or Negative Declaration identifying compliance with CEQA.

b. California Department
of Fish and Game

The Department of Fish and Game has responsibilities for protection, conservation, propagation and enhancement of California's wildlife resources. Their interest with regard to geothermal resource development thus relates to potential impact of a project on endangered or protected species and wildlife displacement and habitat.

Fish and Game Code,
Sections 2050-2055.
California Endangered
Species Act of 1970.
Fully Protected Species
Act, Fish and Game Code,
Sections 3511, 4700,
5000, 5050 and 5515.

c. State Water Resources
Quality Control Board

Undertakes planning efforts mandated by both State and Federal law, setting water quality objectives and recommended programs to achieve objectives within defined basins.

Porter-Cologne Water
Quality Control Act
Title 23, CAC Sub-
chapter 15.

TABLE I-1 (Continued)

INTERESTED AGENCIES: GEOTHERMAL RESOURCE (contd)

c. State Water Resources
Quality Control Board
(contd)

Waste discharge requirements affecting water quality, surveillance and monitoring programs and enforcement responsibilities are delegated to Regional Water Quality Control Boards.

SWRCB Non-Degradation
Policy Resolution Number
68-16, Oct. 28, 1968.

Federal Water Pollution
Control Act, Pub. Law
92-500, 33 USC 1321.

d. Lahontan Regional Water
Quality Control Board
(LRWQCB)

The Regional Water Quality Control Board is mandated by the State Water Resources Control Board (SWRCB) to issue Waste Discharge Requirements to dischargers of liquid waste who affect water quality, including both surface waters and ground waters. The Regional Boards are authorized to issue waste discharge permits under provisions of Federal law.

Porter-Cologne Water
Quality Control Act,
Title 23, CAC Subchapter
15.

SWRCB Non-Degradation
Policy, Resolution
No. 68-16, Oct. 28, 1968.

Federal Water Pollution
Control Act, Pub. Law
92-500, 33 USC 1321.

A Surveillance and Monitoring Program checks for compliance, conducts aerial surveillance and coordinates data from other state and Federal agencies.

Enforcement includes issuance of administrative cleanup and cease-and-desist orders and/or referral to Attorney General for court action.

During geothermal drilling primary concern is directed toward construction of the mud sump disposal of drilling wastes and erosion control.

In addition to acquisition of waste discharge permits a Contingency Plan for Accidental Spills and Discharges must be developed and approved.

TABLE I-1 (Continued)

INTERESTED AGENCIES: GEOTHERMAL RESOURCE (contd)

e. Lassen County Air
Pollution Control
District (LCAPCD)

The Air Pollution Control Officer (APCO) is responsible for enforcing the Rules and Regulations of the Lassen County Air Pollution Control District (LCAPCD) to achieve and maintain local, state and Federal air quality standards within Lassen County.

Rules and Regulations of the Lassen County Air Pollution Control District, Oct. 1, 1971.

The regulations shall be construed for the protection of the health, safety and welfare of the people of Lassen County.

California Health and Safety Code, Sections 24242 or 24243.

Authority to Construct: An Authority to Construct for the APCO is required for any building, erecting, altering or replacing any article, machine, equipment or other contrivance which may cause issuance of air contaminants or may eliminate or reduce or control issuance of air contaminants.

LCAPCD Rule 2:0a.

Permit to Operate: A Permit to Operate is required from the APCO before any article, machine, equipment or contrivance may be operated or used which may cause issuance of air contaminants.

LCAPCD Rule 2:0b.

f. Lassen County Planning
Department

The Lassen County Planning Department designates zoning in Lassen County with respect to land use. The Planning Department is responsible for issuing Use Permits for development and construction within the county. Although there is no specific designation for geothermal power plants a Use Permit will be required for geothermal exploration and development.

Lassen County Ordinances 293, et. seq.
Lassen County, California
General Plan: 1990.

Lassen County has established a Procedure for Review of Environmental Impact in accordance with CEQA.

Resolution No. 78-79-102

The Planning Department performs the function of Lead Agency for the County in consultation and concurrence of other county departments.

TABLE I-1 (Continued)

INTERESTED AGENCIES: GEOTHERMAL RESOURCE (contd)

g. Lassen County Department of Public Works	Grading Permit: An Application for Use Permit requires identification of location, plan of construction and specifications for grading, filling compaction and means for access. Right-of-Way and Encroachment Permit: Evidence of rights-of-way and an encroachment permit from the Department of Public Works and appointment of an inspector for the county may be expected.	Lassen County Building Code.
h. Lassen County Health Department	Sanitation Permit: The County Health Department will require a Sanitation Permit if appropriate.	Lassen County Health and Safety Ordinance.
i. Lassen County Fire Marshal	A Burning Permit will be required by the County Fire Marshal with concurrence of the County Air Pollution Control Officer.	Lassen County Fire Code.

TABLE I-1 (Continued)

INTERESTED AGENCIES: WOOD FUEL RESOURCE

a. U.S. Bureau of Land Management (BLM)

Responsible for total management of public (Federal) lands including development and use of the public lands and resources; timber, minerals, oil and gas, geothermal energy, wildlife habitat, endangered plant and animal species, rangeland vegetation, recreational and cultural values, wild and scenic rivers, designated conservation and wilderness areas.

Federal Land Policy and Management Act of 1976 (90 Stat. 2743, 43 USC 1701 et. seq.)

Rights-of-Way

(90 Stat. 2776, 43 USC 1761, et. seq., 43 CFR 2800, 2801 and 2802)

b. U.S. Forest Service

Responsible for national leadership in forestry including: Promotion and achievement of a pattern of natural resource uses that will best meet the needs of people now and in the future;

The protection and development of the reserves governed by the organic act of June 4, 1897 (30 Stat. 34-36; 16 USC 473-478), as amended. The multiple use-sustained yield act of June 12, 1960 (74 Stat. 215; 16 USC 528-531). The Forest and Rangeland Renewable Resources Planning Act of 1974 (88 Stat. 476; USC 1601-1610). The National Forest Management Act of 1976 (90 Stat. 2947). The Cooperative Forestry Act of 1978.

Protection and improvement of the quality of air, water, soil and natural beauty;

Protection and improvement of the quality of the open space environment in urban and community areas;

Generation of forestry opportunities to accelerate rural community growth;

Encouragement of the growth and development of forestry based enterprises that readily respond to consumers' changing needs;

TABLE I-1 (Continued)

INTERESTED AGENCIES: WOOD FUEL RESOURCE (contd)

c. National Park Service	Administers the system of national parks, monuments, historical sites and recreation areas.	Established in Dept. of Interior Aug. 25, 1916 (39 Stat. 535, 16 USC 1)
d. U.S. Soil Conservation Service	An advisory service only with no licensing or permitting responsibility.	
e. California Department of Forestry	To create and maintain an effective and comprehensive system of regulation and use of all timberlands.	Z'Berg-Nejedly Forest Practice Act of 1973 (Div. 4 PRC Ch. 8 as amended by SB 667, 1979) Regulations: 14 CAC, Sections 1020, et. seq. Forest Practice Rules, Northern Forest District, 1980 Ed.
	License	PRC Sec. 4571, 14 CAC Section 1023.
	Timber Harvesting Plan	PRC Sec. 4581, 14 CAC Section 1032.
	Timberland Conversion Permit	PRC Sec. 4621, 14 CAC Section 1103
f. California Department of Fish and Game	The Department of Fish and Game has responsibilities for protection, conservation, propagation, and enhancement of California's wildlife resources. The Department cooperates with and aids local and other governmental agencies in acquiring and developing projects for recreation and for conservation of wildlife.	Fish and Game Code, Sec. 2050-2055. California Endangered Species Act of 1970. Fully Protected Species Act, Fish and Game Code, Sec. 3511, 4700, 5000, 5050 and 5515.

TABLE I-1 (Continued)

INTERESTED AGENCIES: WOOD FUEL RESOURCE (contd)

- g. California Department of Parks and Recreation Acquires, develops, operates, preserves and administers State recreation areas, parks, historic parks, historic monuments, beaches and reserves.
- h. California Department of Transportation (CALTRANS) Responsible for development, operation, rehabilitation and maintenance of the State system of highways.
- Encroachment Permit (Form DH-MP-1) Refer: State Maintenance Manual, Ch. 25, CALTRANS, Oct. 1975. Streets and Highway Code, Sec. 660-734.
- Utility Encroachment Permit (Form DH-MP-1B) Refer: Terms and Conditions Relating to Utility Encroachments, CALTRANS, Nov. 1975.
- i. State Water Resources Quality Control Board Undertakes planning efforts mandated by both State and Federal law, setting water quality objectives and recommended programs to achieve objectives within defined basins.
- Waste discharge requirements affecting water quality, surveillance and monitoring programs and enforcement responsibilities are delegated to Regional Water Quality Control Boards.
- Porter-Cologne Water Quality Control Act Title 23 CAC Subchapter 15.
- SWRCB Non-Degradation Policy Resolution Number 68-16, Oct. 28, 1968.
- Federal Water Pollution Control Act, Pub. Law 92-500, 33 USC 1321.

TABLE I-1 (Continued)

INTERESTED AGENCIES: WOOD FUEL RESOURCE (contd)

j. Lahontan Regional Water Quality Control Board

The Regional Water Quality Control Board is mandated by the State Water Resources Control Board (SWRCB) to issue Waste Discharge Requirements to dischargers of liquid waste who affect water quality, including both surface waters and ground waters. The Regional Boards are authorized to issue waste discharge permits under provisions of Federal law.

A Surveillance and Monitoring Program checks for compliance, conducts aerial surveillance and coordinates data from other state and Federal agencies.

Enforcement includes issuance of administrative cleanup and cease-and-desist orders and/or referral to Attorney General for court action.

Porter-Cologne Water Quality Control Act
Title 23 CAC Subchapter 15.

SWRCB Non-Degradation Policy Resolution Number 68-16, Oct. 28, 1968

Federal Water Pollution Control Act, Pub. Law 92-500, 33 USC 1321.

k. Lassen County Air Pollution Control District

Rules and Regulations of the Lassen County Air Pollution Control District are administered by the Air Pollution Control Officer (APCO) of the Lassen County Air Pollution Control District.

The Rules and Regulations of the Lassen County Air Pollution Control District are understood to be in the process of revision to comply with the rules and regulations of other Air Pollution Control Districts. No substantial changes in requirements or practices are anticipated.

Burning Permit: Open fires for the purpose of disposal of waste materials created as an incidence to the clearance and development of land shall be burned only after approval by a fire official having jurisdiction in the performance of official duty and the Air Pollution Control Officer.

Rules and Regulations of the Lassen County Air Pollution Control District, Oct. 1, 1971.

Rules 4:7, 4:8h.

a. California Energy Commission (CEC) (Lead Agency)

- Application for Exemption

The Warren-Alquist Act, Public Resources Code Section 25000 et seq., established the CEC with exclusive power to certify all power plant sites and related facilities in the state.

Plant site certification is obtained upon review and approval of a Notice of Intention to File an Application for Certification (NOI) and/or an Application for Certification (AFC). Certification by the CEC is in lieu of any permit, certificate or similar document required by any state, local, regional, or federal agency to the extent permitted by Federal law.

According to Section 25541, the CEC may exempt thermal power plants with a generating capacity of less than 100 megawatts from the certification process, if the Commission finds: a) no substantial adverse impact on the environment or energy resources will result from the construction or operation of the proposed facility, and b) generating capacity will not be added which is substantially in excess of the forecast of electric energy demands adopted pursuant to Section 25309(b) of the Public Resources Code.

Site Certification Regulation of the CEC, Title 20, California Administrative Code, Section 1934 et seq., prescribes the procedures for obtaining Small Power Plant Exemptions.

A "Negative Declaration," prepared by the CEC in lieu of an Environmental Impact Report (EIR), will be binding on all agencies (with regard to environmental issues of plant siting only). Mitigation measures and monitoring may be required as conditions.

A Small Power Plant Exemption does not supercede local, state or regional laws or permitting authorities. Therefore, other responsible agencies must be satisfied.

b. California Public Utilities Commission (PUC)

- Certificate of Public Convenience and Necessity (unless exempt under PURPA)

c. Lassen County Air Pollution Control District (LCAPCD)

- Authority to Construct
- Permit to Operate
- New Source Review Rule adopted for the Northeast Plateau Air Basin

d. U.S. Environmental Protection Agency (EPA)

- Prevention of Significant Deterioration (PSD), Approval to Construct

e. Lahontan Regional Water Quality Control Board (LRWQCB)

- Waste Discharge Requirements
- Contingency Plan for Accidental Spills and Discharges

f. State Solid Waste Management Board (SWMB)

- Solid Waste Facilities Permit

g. Lassen County Planning Department (Lead Agency)

- Special Use Permit (Probable)

h. Lassen County Department of Public Works

- Grading Permit
- Right-of-Ways Encroachment Permit

i. Lassen County Health Department

- Sanitary Permit

j. California Division of Occupational Safety and Health (Cal-OSHA)

- Accident Prevention Program

II. ENVIRONMENTAL DATA REQUIREMENTS - AIR RESOURCES

A. INTRODUCTION AND GENERAL COMMENTS

Air resources-related environmental information requirements of Federal, State, and local permitting agencies overlap somewhat. Requirements of the U.S. Environmental Protection Agency (EPA), as expressed in its interpretation and application of PSD, are discussed herein. EPA's guidelines for monitoring and air quality modelling are the most comprehensive and match or exceed State and local requirements. Meteorological and/or air quality monitoring will involve:

1. Baseline measurements of existing meteorological, climatological and air quality conditions at the proposed power plant site.
2. Post-construction monitoring to assess and confirm air quality impacts.
3. Installation and operation of in-plant sampling and testing facilities as specified in an Authority to Construct (A/C) or Permit to Operate (P/O).

Meteorological monitoring and data collection required by the EPA under PSD regulations are essential to the air quality impact analysis which is also subsequently required and which must be conducted for all federally regulated pollutants (which include those criteria pollutants for which National Ambient Air Quality Standards [NAAQS] exist and those non-criteria pollutants for which no NAAQS exist but which are considered hazardous materials and as such are regulated).

The instrumentation selection and siting, data acquisition and reduction, calibration and quality assurance for meteorological and air quality monitoring represents a considerable effort. Some of the more important highlights will be discussed here to indicate the scope and complexity of this phase of environmental informational needs.

A monitoring plan should be developed for the project, submitted for approval by the permit-granting authority before any PSD monitoring begins. The minimum content of such a plan is presented in Table II-1.

MINIMUM CONTENTS OF A MONITORING PLAN

I. SOURCE ENVIRONMENT DESCRIPTION
(within 2 kilometers of source)

- topographical description
- land use description
- topographical map of source and environs (including location of existing stationary sources, roadways and monitoring sites)
- climatological description
- quarterly wind roses (from meteorological data collected at the source or other representative meteorological data)

II. SAMPLING PROGRAM DESCRIPTION

- list of pollutants and meteorological parameters to be monitored.
- time period for which the pollutant(s) will be monitored.
- rationale for location of monitors (include modelling results and analysis of existing sources in the area)
- rationale for joint utilization of monitoring network by other PSD sources

III. MONITOR SITE DESCRIPTION

- Universal Transverse Mercator (UTM) coordinates
- height of sampler (air intake) above ground
- distance from other sources (stationary and mobile)
- photographs of each site (five photos: one in each cardinal direction looking out from each existing sampler or where a future sampler will be located, and one closeup of each existing sampler or where a future sampler will be located. Ground cover should be included in the closeup photograph.)

IV. MONITOR DESCRIPTION

- name of manufacturer
- description of calibration system to be used
- type of flow control and flow recorder

TABLE I-1
(Continued)

V. DATA REPORTING

- format of data submission
- frequency of data reporting

VI. QUALITY ASSURANCE PROGRAM

- calibration frequency
- independent audit program
- internal quality control procedures
- data precision and accuracy calculation procedures

SOURCE: EPA (1980), page 12

B. NEED FOR METEOROLOGICAL MONITORING

Since the required air quality analysis will be based, in part, upon meteorological data, such data must be representative of atmospheric dispersion conditions at the project site and at locations at which the project may have significant impact on air quality (EPA, 1980, pages 38 - 46). In order to provide a data base representative of the project site, meteorological monitoring should therefore include, as a minimum:

1. Hourly average wind speed and direction.
2. Hourly average atmospheric stability based on Pasquill stability categories or on wind fluctuations (Sigma azimuth), or vertical temperature gradient combined with wind speed.
3. Hourly surface temperature at standard height for climatological comparison and plume rise calculations.
4. Hourly precipitation amounts for climatological comparison.

Hourly average mixing heights may be necessary for air quality impact analysis. Extrapolation from National Weather Service (NWS) radiosonde measurements may be sufficient. "The type, quantity and format of the required meteorological data will also be influenced by the input requirements of the dispersion modelling techniques used in the air quality analysis" (EPA, 1980, page 38).

Meteorological data obtained at the Sierra Ordinance Depot, 5 km (3 mi) to the southeast, and at Susanville, 27 km (17 mi) to the northwest, may be used in the air quality impact analysis although it will be necessary to augment these data with project site monitoring. In order to ensure that data is representative, care must be taken in siting the meteorological monitoring network, taking into consideration complexity of terrain, exposure of the sensors and height and location of pollutant emission sources.

The meteorological monitoring period is normally one year, but may be of a shorter period in order to conform to the air quality monitoring period, if approved by the granting authority (see C. Need for Air Quality Monitoring below). If multi-year data is available, it is suggested that it be included in the analysis since periods of five years or more reduce the year-to-year meteorological variations.

1. Meteorological Instrumentation

Specifications for instrumentation precision and accuracy are described in detail in the PSD literature (PSD, 1980, pages 42 - 44). Instrumentation or observation will be required to continuously monitor the following meteorological characteristics.

- a. Wind Systems (speed and direction)
- b. Temperature

- c. Mixing Height (periodic observations)

Optional instrumentation can record the following:

- a. Radiation: Solar and Terrestrial
- b. Humidity
- c. Precipitation
- d. Visibility

2. Quality Assurance

Pre-monitoring maintenance and calibration should be done before initiating data acquisition to ensure that prescribed error limits and accuracies are met. A data capture rate of 90% must be maintained during air quality monitoring, therefore appropriate maintenance scheduling must be conducted. At remote sites, data recovery should not drop below 80%. Calibration of instrumentation must be conducted at least every six months and more frequently under dusty or corrosive conditions.

Calibration facilities or arrangements as well as spare parts, should be arranged before commencement of monitoring. An independent meteorological audit should be performed to field-calibrate the instrumentation and evaluate 1) the network installation, 2) inspection, maintenance, calibration procedures and logging, 3) data reduction and spot-checking procedures and 4) data logging and tabulation procedures. The independent audit should be conducted within 60 days of the commencement of monitoring with a written audit/evaluation submitted to the owner. A copy of the audit should accompany permit applications. A re-audit should be conducted each six months of operation, with the last audit to be performed not more than thirty days prior to the termination of the monitoring program.

C. NEED FOR AIR QUALITY MONITORING

The requirements for air quality monitoring must be studied on a pollutant-by-pollutant basis. As discussed previously, both criteria and non-criteria pollutants must be considered and their respective air quality impacts assessed. Since such analysis requires use of meteorological baseline data, it may be prudent to begin meteorological monitoring before attempting to finalize the air quality monitoring program. Those emissions from the proposed project which can be shown by air quality impact analysis to be below the de minimus cutoff values will not require air quality monitoring (see First Phase Report, page I-12). Monitoring of non-criteria pollutants generally will not be required.

The objectives of the air quality monitoring program are to establish background air quality concentrations in the project area to ensure that concentrations will not exceed the National Ambient Air Quality Standards (NAAQS) or PSD increments, and to validate and refine air quality impact modelling.

The air quality monitoring network must be representative of 1) the location(s) of maximum concentration increase from the project emissions, 2) the location(s) of maximum air pollutant concentrations from existing sources, and 3) the location(s) of the area of maximum impact from existing and proposed project emissions (EPA, 1980, page 6). These siting requirements will require preliminary air quality impact analysis of the proposed project and assessment of existing pollution emission sources. The air quality monitoring must have been conducted in the three year period preceding permit application, provided that the data is still representative of current conditions. A one-year monitoring period is usual although this may be shortened by the permit granting agency, but it must not be shorter than four months. However, the PSD regulations make provision for shortening the baseline monitoring period to four months when it can be documented that low levels of most pollutants exist in the project area and that no significant excursions occur during the baseline monitoring period. Post-construction air quality monitoring requirements are decided on a case-by-case basis but may be necessary to verify that air quality impact modelling was adequate and that no NAAQS or PSD increment was violated.

The air quality monitoring network design and probe siting constitutes an important segment of the over-all monitoring plan. As described in EPA, 1980, pages 8 - 27, there are extensive and detailed requirements to ensure the representativeness of the network. Measurement standards and equipment specifications must conform to published EPA Quality Assurance procedures or their equivalent (EPA, 1979, Appendices B and C).

1. Selection of Air Quality Monitoring Pollutants

As discussed previously, only criteria pollutants will probably be considered for air quality monitoring. These include Carbon Monoxide (CO), Nitrogen Dioxide (NO₂), Sulfur Dioxide (SO₂), Total Suspended Particulates (TSP) and Ozone. After June 8, 1981, air quality monitoring will be considered for non-criteria pollutants as well (see de minimus list, First Phase Report, page 7-12).

Most of the Northeast Plateau Air Basin, of which Lassen County is a part, has excellent air quality due to the low population density and good ventilation. However, the project site lies within the Honey Lake Valley, a topographical depression which is subject to air stagnation and an accumulation of air pollutants due to reduced ventilation (Department of Food and Agriculture, 1978, page LAS-3-1).

California Air Resources Board records may adequately document low levels of CO, NO₂ and SO₂, so that continuous monitoring may not be required since it is anticipated that levels of these pollutants will be low. Air quality monitoring of TSP and Ozone will be required since TSP levels monitored at Susanville, 27 km (17 mi) to the northwest, have periodically exceeded the State Ambient Air Quality Standard of 100 ug/m³ (3 times in 1973, 4 times in 1974, 10 times in 1975 and several times in 1976). Separate measurement of visibility may also be necessary. Measurement of Ozone at Herlong, 24 km (15 mi) to the southeast, during 1979 recorded a maximum of 0.09 ppm with an average of 0.042 ppm. This exceeds the federal standard of 0.08 ppm, and approaches the state standard of 0.1 ppm. Post-construction air quality monitoring will probably be required to assure compliance with NAAQS and for verification of air quality impact modelling.

D. NEED FOR AIR QUALITY IMPACT ANALYSIS

There is considerable interaction between air quality impact analysis and meteorological and air quality monitoring. Development of an optimum air resource monitoring program is dependent upon close interaction with pre-screening air quality impact analysis, and conversely, the accuracy of air quality impact modelling is dependent upon meteorological monitoring data.

New Source Review procedures require air quality impact analysis to follow a three-phase screening procedure (EPA, 1977):

- Phase 1: Apply a simple screening procedure to determine if either 1) the source clearly gives no air quality problem or 2) the potential for an air quality problem exists.
- Phase 2: If Phase I indicates that an air quality problem exists, detailed screening using basic modelling procedures is necessary.
- Phase 3: If detailed screening using basic modelling procedures indicates that a more refined analysis is necessary, then more advanced EPA air quality models are required (EPA, 1978).

This New Source Review three-phase air quality impact analysis is sufficient for the preliminary analysis required by PSD in regard to "significance" and de minimis levels, but must be reorganized to fit into an acceptable Best Available Control Technology (RACT) analysis format.

Air Quality impact analysis is also required by the State of California Energy Commission for Notice of Intention (NOI) or application for Small Power Plant Exemption; by the requirements of the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA) for the Environmental Impact Report/Statement (EIR/EIS); and by the local Lassen County Air Pollution Control District for its Authority to Construct (A/C) and Authority to Operate (O/P).

Environmental information needs in regard to air resources are summarized in Appendix Table X-2. Considerable interaction between monitoring and air quality impact analysis is required.

E. CALIFORNIA ENERGY COMMISSION APPLICATION INFORMATION REQUIREMENTS

Information requirements of a Notice of Intent or application for a Small Power Plant Exemption (with CEC retaining lead agency status under CEQA) include the following:

1. Available baseline air quality data including concentrations of pollutants, and a comparison of air quality data with applicable ambient air standards.
2. Available meteorological data, including wind speed and direction, ambient temperature, relative humidity, stability and mixing height, and available upper air data.
3. A discussion of the extent to which the data in Subsections 1 and 2 above are typical of conditions at the proposed site and the region; also, provide a description of the monitoring program, if any, used to obtain required data, including the location and elevation of monitoring stations, parameters measured, and duration of monitoring.
4. A worst case air quality impact analysis for each proposed site and related facility and source of air emissions, assuming worst case meteorological conditions and emissions consistent with applicable emission standards, including the cumulative effect of wells and pipelines in normal and shutdown modes of operation, in order to determine the worst case impact on potential sensitive receptors. Such analysis shall include the basis of the worst case and consider topography, meteorology, and contributions from other sources in the region.
5. A general description of normal and shutdown modes of operation for the proposed facility or facilities that affect the release of pollutant emissions into the atmosphere for existing and proposed sources or groups of sources that would have additive effects, including estimated frequency of occurrence, duration, location, and estimated emission rate for each pollutant of interest.
6. A general discussion of expected or confirmed chemical constituencies of gaseous and particulate pollutants from the proposed project including wells and resource conveyance lines.
7. For facilities using an external water supply, an estimate of cooling tower particulate and gaseous emissions associated with each alternative cooling water source considered.
8. A discussion of applicable rules, including but not limited to standards, new source review, and significant deterioration rules established pursuant to Chapter 1 (commencing with Section 39000) of Division 26 of the Health and Safety Code, and the methods proposed to satisfy these rules.

III. ENVIRONMENTAL DATA REQUIREMENTS - VEGETATION AND WILDLIFE

A. INTRODUCTION AND GENERAL COMMENTS

The following general information on vegetation and wildlife is required in a California Energy Commission NOI or Small Power Plant Exemption, as well as in a document meeting the requirements of the California Environmental Quality Act:

1. A description of vegetational communities, general wildlife and aquatic resources, and dominant species within the area shown by the environmental consultant to be potentially impacted by the proposed project.
2. An identification on a map, and a description of the known probable distribution, of fully-protected, rare, threatened or endangered plant and animal species, and commercially or recreationally-values species and habitats shown to be adversely affected by the project.
3. An identification of biological species of special concern and areas of critical biological concern with in the area shown to be potentially impacted by the proposed project.
4. A description of the proposed project's potential effects on legally-protected and commercially and recreationally-valued biological resources, species of special concern and areas of critical biological concern.
5. A discussion of measures proposed or under consideration to mitigate impacts to identified biological resources.

B. THE NEED FOR NEW ENVIRONMENTAL DATA

The environmental assessment prepared for geothermal leasing of Federal lands within the Honey Lake Valley (BLM, 1977), and the report of a field search for threatened and endangered plant species (Tiehm, 1980) contains most of the needed information regarding vegetation and wildlife. Site-specific field studies will be needed once the power plant, pipeline and electrical transmission routes are selected. These studies would define and quantify site-specific project impacts to vegetation and wildlife.

Phase I of this report identifies certain biological-resource issues. They include:

1. Impacts of transmission lines and towers on migrating and nesting waterfowl.
2. Water use by the power plant and its possible effects upon wildlife. These effects may be associated with wastewater discharges, groundwater depletion (reducing water available from springs or wells at the Honey lake Wildlife Area), or humidity from cooling tower drift.
3. Impacts of wood-fuel acquisition on forest vegetation and wildlife habitats.

Additional information on Items 1 and 2 above will be needed to prepare the required biological impact analysis for the power plant and its appurtenances. This information should be available following the preliminary design of the power plant and appurtenances; or after the surface water and groundwater studies described elsewhere in this Phase II report.

Wood fuel harvesting will generally follow logging operations. These logging operations will occur throughout the region at yet-undefined locations over the 30-year life of the power plant. Logging operations on state and private lands require a Timber Harvest Plan and accompanying environmental data pursuant to the California Environmental Quality Act. Logging operations on Federal lands require environmental documents pursuant to the National Environmental Policy Act. Therefore, no separate environmental documents regarding wood fuel procurement are believed possible at this time, nor should they be necessary.

A general description should be prepared on wood fuel procurement and its possible impacts. This discussion should identify the intended wood procurement region, forest types, procurement procedures, potential biological impacts and suggested mitigation measures. This discussion would be generic in nature, with the understanding that other types of environmental documents would be required for specific wood-fuel harvesting projects.

IV. ENVIRONMENTAL DATA REQUIREMENTS - GEOTECHNICAL ENVIRONMENT

A. INTRODUCTION AND GENERAL COMMENTS

The project area's geotechnical environment has been described in RLM (1977) and GeothermEx (1980). This information is adequate to meet many of the informational requirements of a California Energy Commission NOT or Small Power Plant Exemption, as well as the California Environmental Quality Act. However, additional information should be developed on the topics discussed below.

B. NEED FOR NEW ENVIRONMENTAL DATA

1. Subsidence

Subsidence of the ground surface could result from withdrawal of deep thermal fluids and/or as a result of withdrawal of the shallower groundwater by local users and for plant use. The phenomena of subsidence is not well understood, so that the potential for subsidence can be estimated but cannot be accurately predetermined by investigations. Additionally, subsidence manifestations generally do not become apparent at the surface immediately, but may appear several years after initial production. Therefore, subsidence can generally only be determined by long-term monitoring of surface elevations during fluid withdrawals. If the plant site is on federal land, the USGS may require subsidence monitoring. If on private land, the State Division of Oil and Gas may require monitoring. Both agencies have advised that the specifics of a monitoring program are individually determined for each location, but that a monitoring program has not been developed for the Honey Lake area. We estimate that long-term monitoring of a precise level network over a portion of the valley will be required.

Some subsidence may be now occurring due to withdrawal of shallow groundwater and limited thermal spring production. Since no subsidence data is known to be available, a subsidence monitoring program should be initiated without delay in order to establish existing subsidence rates prior to plant start-up.

Subsidence should be monitored by a network of permanent benchmarks installed at one-half mile intervals along a line or lines extending from existing USGS benchmarks to each of the geothermal wells. This program should utilize second order, Class II surveys (closure not exceeding 8 mm times the square root of the distance in kilometers) to establish initial benchmark elevations, and should resurvey the network at two six-month intervals, to determine the degree to which subsidence (or uplift) may be occurring in the area during the baseline period.

2. Settlement

Settlement has been defined as compression of the near surface soils under externally applied loads (i.e., the plant). In order to preliminarily determine foundation and settlement conditions at the plant site, we recommend that a limited subsurface soil investigation program be undertaken. This program should consist of drilling and sampling several widely-spaced borings. In our opinion, four borings to depths of about 100 feet each would be required. This program would provide preliminary design data on the engineering properties of the soil, foundation conditions, settlement potential, groundwater data and liquefaction potential. This preliminary data should be augmented at a later date by a full-scale foundation investigation to provide soil engineering recommendations for design when plant design parameters are known.

3. Seismicity

The principal seismic hazards at this site are: 1) surface rupture, 2) ground shaking, and 3) ground failure.

In order to evaluate the potential for surface rupture and ground shaking, a detailed seismicity study will be required. This study should consist of collection of data required to assign maximum probable and maximum credible earthquakes to the area's faults and to evaluate the activity status of these faults, particularly those within the proposed plant site area. In this latter area, it may be necessary to employ geophysical methods and trenching of the ground surface to attempt to determine the location of potentially-active fault traces within the plant area. These fault traces should be avoided for siting of improvements.

At a later date, when plant design is known and when a full scale foundation investigation is performed, a dynamic response analysis may be needed to evaluate building/site response.

Ground failure at the plant site would be limited to the potential for liquefaction. The preliminary subsurface soil investigation referred to above under settlement would evaluate the potential for liquefaction.

If reinjection of thermal fluids is contemplated, the possibility exists that the injection could induce seismic events. The probability of such induced events is low, particularly if low injection pressures are used. The possibility of such events should be considered in evaluating seismicity.

4. Groundwater

Available information indicates that a groundwater overdraft condition may exist in the Honey Lake Basin. Specific data indicative of an overdraft situation was derived solely from California Department of Fish and Game groundwater pumping records at the Honey Lake Wildlife Area. The California Department of Water Resources does not monitor groundwater levels in the vicinity of the proposed power plant site. A comprehensive study should be undertaken to 1) confirm and document the groundwater overdraft situation in the northern Honey Lake - Wendell area, and 2) investigate the feasibility of mitigating project near-surface groundwater withdrawals.

Available well logs and well pumping data should be compiled for the region. This information would be obtained from water well drillers, water users, geothermal exploration companies, and others, if available. Historic well depths, pumping rates and well failures in conjunction with well log information should provide a basis for evaluating the source and extent of any groundwater overdraft.

The feasibility of mitigating near-surface groundwater withdrawals will depend largely upon the quality of any geothermal waters discovered during exploratory drilling. Water quality criteria for irrigation, wildlife habitat and other identified beneficial uses should be determined, and the feasibility of reusing wastewater from the power plant should be evaluated.

V. ENVIRONMENTAL DATA REQUIREMENTS - SURFACE WATERS AND SOLID WASTE

A. INTRODUCTION AND GENERAL COMMENTS

Information regarding surface waters which is typically required to satisfy requirements of a California Energy Commission NOI or Small Power Plant Exemption, as well as the California Environmental Quality Act, is indicated below:

1. An identification of nearby surface waters such as streams, lakes, or springs (including thermal springs).
2. Hydrologic and water quality characteristics of surface waters.
3. Temperature, mineral content, rate of flow, and other aspects of nearby thermal springs.
4. A description of the proposed project uses of surface waters and a discussion of the availability of these waters for these proposed uses.
5. A discussion of alternatives to use of fresh water for cooling purposes.
6. A discussion of liquid discharges, either permitted or accidental, or disposal of solid waste materials which could impact the quality of surface waters.
7. A discussion of potential project impacts on the temperature, mineral content, rate of flow and other aspects of nearby utilized thermal springs.

Similarly, information typically required regarding solid waste disposal includes:

1. A discussion of the intended means of disposing of solid waste materials and a description of measures that will be taken to protect surface and groundwaters.
2. All phases of the project, including the intended means of solid waste disposal, must be considered in environmental impact analysis. Air quality, traffic and other impacts of solid waste disposal must be considered and described.

B. NEED FOR NEW ENVIRONMENTAL DATA

Existing information generally appears adequate to address most issues related to surface water and solid waste. The power plant site is relatively arid. The nearest surface waters are the Wendel Hot Springs and the Susan River with adjoining Fleming CDFG Wildlife Area. Present intentions are to develop a commercial use for wood ash, the major solid waste product (Fogleman, 1981).

Additional information will be required regarding the following topics:

1. Surface Water Quality Requirements for Wastewater Reuse

Wastewater (i.e., used near surface or geothermal groundwaters) from the power plant may be suitable for reuse. Potential wastewater uses include supplying a portion of the Honey Lake Wildlife Area's water demand, or irrigation elsewhere. Information on existing uses of surface waters (primarily the Susan River), and the water quality requirements for these uses, should be obtained from the Department of Water Resources or other sources. This should be done in conjunction with a similar investigation of groundwater uses. This investigation would identify possible beneficial uses of waters discharged by the power plant.

2. Wendel Hot Springs

Wendel Hot Springs now supplies water to a nearby greenhouse operation. Available information should be compiled regarding the temperature, mineral content, rate of flow, portion of the flow used for greenhouse operations, and future expansion plans. This information would be used for a general assessment of the possible impacts of powerplant geothermal water withdrawals.

3. Solid Waste Disposal

We understand that the commercial potential of wood ash use (e.g., as a fertilizer or feedstock) will be investigated. Information necessary to determine the environmental impacts of the proposed disposal method will be required.

4. Additional Potential Water Sources

Utilization of brackish groundwater, irrigation return flows and municipal and industrial wastewater must be investigated in order to address the State Water Resources Control Board priority list of cooling water supplies.

VI. ENVIRONMENTAL DATA REQUIREMENTS - CULTURAL RESOURCES

A. INTRODUCTION AND GENERAL COMMENTS

The first phase of this report summarized the general steps needed for compliance with legislation regarding protection of cultural resources. As applied to this project, compliance requires several specific actions to generate information on cultural resources and provide for their protection.

B. NEED FOR NEW ENVIRONMENTAL DATA

A detailed cultural resources investigation is required for the power plant site area, the electrical transmission route, and any other project-related construction areas. The cultural resources survey would involve the following steps.

1. Interviews with local Native Americans, who are knowledgeable in the traditional ways of their people and representatives of the Native American Heritage Society, and Community College faculty in the area must be consulted to determine if the project could affect traditional gathering areas, sacred spots or other features of importance to Native Americans.
2. Professional cultural resource experts must inspect the property to locate and evaluate all resources on the property. The Eagle Lake Ditch on the property should be evaluated concurrently to determine if this section possesses, "...integrity of location, design, setting, materials, workmanship, feeling, and association. . ."
3. The principal investigator for cultural resource assessment of the property must determine if any of the identified resources appear to be eligible for the National Register of Historic places. If not, this is grounds for a declaration of "no adverse effect." If significant resources are present, the project's effect on the resources must be determined. If it can be demonstrated that construction and operation of the powerplant as designed will not impact significant resources, this also qualifies as "no adverse effect."
4. If it is found that implementation of the project will produce adverse impacts to significant cultural resources, a plan must be developed for elimination or mitigation of this impact or impacts. This plan can include elimination of impact by redesigning of the project or by site protection (fencing off the site, covering the site, etc.), or it may include a plan for scientific data recovery. The latter is a viable alternative if protection is not feasible and if the adverse impact is seen as the loss of significant anthropological data. By funding a scientific data recovery program and reporting the results, the developer prevents the "loss" of these data.
5. Any cultural resources management plan, required as a result of the above tasks, should be developed in consultation with the State Historic Preservation Officer.

VII. ENVIRONMENTAL DATA REQUIREMENTS - PUBLIC HEALTH,
INDUSTRIAL HYGIENE AND NOISE

A. INTRODUCTION AND GENERAL COMMENTS

A California Energy Commission NOT or Small Power Plant Exemption requires the following general information regarding public health, industrial hygiene, and noise:

1. An identification, to the extent known, of solid, gaseous and water-borne emissions which may cause adverse health effects in the surrounding population.
2. An estimate of the ambient concentrations of these pollutants and the worst case incremental increase expected as a result of project emissions.
3. A general discussion of concentrations, to the extent known, which might create significant adverse health effects from identified pollutants as disclosed in available literature. The discussion shall include variables due to differing age groups within the general population and portions of the general population which may be particularly affected by any identified emissions. The discussion shall also include the age distribution and size of the population which might be affected by these emissions.
4. A discussion of all existing Federal, state and local health standards for identified project emissions.
5. A land use map which identifies noise-sensitive receptors or groups of receptors in the vicinity of the proposed site and related facilities and which includes future land uses identifiable from adopted land use plans and filed development plans at the time of filing the notice.
6. A discussion of either the results of daytime and nighttime ambient noise surveys at the site and at sensitive receptors, including the general weather conditions during the surveys; or any plans to conduct such surveys.
7. A description of major plant noise sources and the estimated range of noise emission levels and characteristics.
8. An estimate of the plant construction and operational noise levels at sensitive receptors potentially impacted by project noise.
9. A discussion of applicable noise standards and ordinances and the general conformance of the proposed project therewith.

B. NEED FOR ENVIRONMENTAL DATA

Limited information is available regarding many industrial hygiene and industrial health issues associated with wood-burning power plants. New information based on actual field or laboratory testing should be developed so that sensitive issues concerning public health and industrial hygiene may be addressed in permit applications and environmental documents. Suggested new information and monitoring data is identified below:

1. Hazardous Air Pollutants Not Regulated under Specific Emission Rules

a. Emission testing of an existing wood-burning power plant for:

PAH
PCDF and PCDD

b. Sampling typical wood fuel for:

2, 4-D and 2, 4, 5-T
Residual chlorides from road salting (which is performed regularly by CalTrans maintenance forces).

c. Emission testing for fugitive dust from wood storage and handling at similar operations.

2. Industrial Hygiene Aspects

a. Similar workplace industrial hygiene monitoring for:

Wood dust
Noise

b. Industrial hygiene monitoring at an existing wood burning power plant for:

NO and NO₂
SO₂
Noise
Fly ash
CO

Obtaining this new information and monitoring data on public health and industrial hygiene will require the following steps:

1. Identifying a suitable plant site and obtaining permission
2. Determining sampling sites
3. Laboratory preparation
4. Sampling and field work
5. Laboratory analysis

3. Noise

The preparation of a land use map which identifies noise-sensitive receptors is discussed in the section entitled "Land Use and Socio-Economic Factors."

Ambient noise surveys should be conducted using a standard sound-level meter which conforms to requirements of the U.S. Standard Specifications for General Purpose Class 2 Sound Level Meters. At least two surveys should be conducted to assure that representative information is obtained. Each survey should involve day, evening and night measurements. Care should be taken to avoid extreme weather conditions, electrical interference, unusual background noise and nearby sound-reflecting sources.

VIII. LAND USE AND SOCIO-ECONOMIC FACTORS

A. INTRODUCTION AND GENERAL COMMENTS

A Notice of Intent, Small Power Plant Exemption and/or a document that would typically satisfy the California Environmental Quality Act will require the following information:

1. A general description, with an accompanying map, of the existing and proposed future land uses of the proposed power plant site and geothermal leasehold as designated by applicable land use plans or guidelines of local, regional, state and federal agencies.
2. A general description, with an accompanying map, of the present and proposed land use classifications for the site, leasehold and adjoining areas which the project might impact.
3. A general description, with an accompanying map, showing the location of municipal, county, regional, state and Federal parks, recreational areas, scenic areas, wildlife sanctuaries, religious sanctuaries or natural areas in the vicinity of the site and leasehold.
4. A general description of the social and economic setting of the area subject to impact from the proposed project.
5. An estimation of labor required during construction and operation of the proposed power plant and the geothermal field.
6. An estimation of the level of temporary and permanent project-related immigration to the local area.
7. An estimation of the impact of construction activities and project operation on the local economy and on the availability of public services and facilities.

B. NEED FOR NEW ENVIRONMENTAL DATA

To provide these general informational requirements, the following investigations should be conducted:

1. Local Land Use

A local land use map should be researched and prepared. The map should identify residences, commercial establishments, agricultural uses, roads and other land uses. The map should also show any future land uses identifiable from adopted land use plans or filed development plans.

2. Employment and Economic Impact Analysis

The existing economic environment of Lassen County and the project area should be described, including industrial output, employment and income, by Standard Industrial Classifications.

Business activities associated with construction and operation of the power plant should then be compared with the current economic environment. Direct and indirect impacts should be calculated, using input-output tables constructed by the California Department of Water Resources in its Bulletin 210, Measuring Economic Impacts (March, 1980).

3. Cost/Revenue Analysis

A public services cost/revenue analysis should be prepared. The costs of maintaining or improving public roads and other public facilities or services should be estimated. Revenue sources to be evaluated should include local fees; general fund sources such as property taxes, property transfer taxes, utility users' tax, retail sales tax, licenses, permits, fines and penalties; revenue-sharing funds; and state and Federal grants.

4. Immigration

Worker skill requirements and seasonal employment opportunities associated with project construction and operation should be evaluated in light of historical unemployed work force characteristics. The purpose of this evaluation would be to estimate the levels of temporary, permanent and seasonal project-related immigration into the local area.

5. Competition For Firewood

Information regarding slash and dead wood availability, present local firewood use and proposed project-related wood use should be compiled to assess the possible impacts on firewood available to the local populace.

IX. SCHEDULING AND BUDGETS

A. PERMITTING SCHEDULES

1. Relationship to Project Schedule

A project schedule (Figure 5-3) was presented in Volume 1, Technical Proposal of Wood Fuel Heat Enhancement Using Geothermal Energy, September 15, 1980 and is repeated here for information. Four annual quarters were allocated to Licensing Process and Final Design (Task 19) during Phase II. All contemplated permits could be acquired within the 12-month time frame, although 18 months is more realistic, if all prerequisites are completed beforehand and permitting regulations are not significantly altered.

2. Prerequisites

- a. Selection of the specific power plant site, geothermal well locations, wood fuel storage areas and waste disposal sites are essential for evaluation of environmental impacts.
- b. Sufficient preliminary engineering information is needed to demonstrate that power plant net electrical output will be less than 100 MWe to permit a Small Power Plant Exemption. The operational design, construction plans, and effluent and emission mitigation measures must be sufficiently defined to permit environmental impact evaluations.
- c. Ambient environmental baseline data must be developed before filing an application for a Small Plant Exemption. Although historical data may be applicable, site specific data on the environmental setting, and on the potential environmental impact of the project is essential. Baseline data should be obtained for at least one year. Continued monitoring of environmental characteristics may be required to assure effectiveness of mitigation measures.
- d. An environmental initial study will be required as part of the Small Power Plant Exemption application. The study should incorporate data on the existing environment, environmental baseline data, a discussion of the project's potential environmental impacts, and measures proposed to mitigate any potentially significant environmental impacts.

3. Schedule for Acquiring Small Power Plant Exemption

The Permitting Schedules, Figure IX-1a and b, illustrate the relationship between the Technical Proposal schedule for the project and events related to acquisition of a Small Power Plant Exemption and local permits.

3.

GeoProducts Proposal Schedule (9/15/80)
 Task 17 Engineering & Plant Layout
 Task 19 Licensing Process & Final Design

Complete Prerequisites:

- Select power plant site
- Select geothermal well sites
- Identify wood fuel collection areas
- Specify plant operation design
- Define construction plans
- Specify effluent and emission mitigation

Prepare Limited Environmental Study
 Prepare Project Description

- Air Resources - meteorological monitoring
 - air quality monitoring
 - air quality modelling
- Vegetation & Wildlife - site specific field studies
- Geotechnical - survey subsidence network
 - settlement & seismicity study
 - groundwater investigation
- Surface Waters - use & quality requirements study
- Cultural Resources - field investigation
- Public Health - identify plants & obtain permission
 - field & laboratory analysis
- Noise - ambient noise surveys
 - noise impact modelling
- Land Use - field investigations & mapping
- Socioeconomics - employment & fiscal impact analysis

Permitting:

- Prepare Application for Exemption
- File Application
- Prosecution to Decision
- File for local agency special permits
- Prosecution to Decision

Monitoring Required by Permitting Decisions:

GeoProducts Proposal Schedule (9/15/80)
 Task 17 Engineering & Plant Layout
 Task 19 Licensing Process & Final Design

Complete Prerequisites:

- Select power plant site
- Select geothermal well sites
- Identify wood fuel collection areas
- Specify plant operation design
- Define construction plans
- Specify effluent and emission mitigation

Prepare Limited Environmental Study
 Prepare Project Description

- Air Resources - meteorological monitoring
- air quality monitoring
- air quality modelling

Vegetation & Wildlife - site specific field studies

- Geotechnical - survey subsidence network
- settlement & seismicity study
- groundwater investigation

Surface Waters - use & quality requirements study

Cultural Resources - field investigation

- Public Health - identify plants & obtain permission
- field & laboratory analysis

- Noise - ambient noise surveys
- noise impact modelling

Land Use - field investigations & mapping

Socioeconomics - employment & fiscal impact analysis

Update Initial Study for CEC

Permitting:

- Prepare Application for Exemption
- File Application
- Prosecution to Decision
- File for local agency special permits
- Prosecution to Decision

Monitoring Required by Permitting Decisions:

GEOPRODUCTS HYBRID POWER PLANT

PERMITTING SCHEDULE ALTERNATE B

FIGURE IX - 1b

SOURCE: Wood Fuel Enhancement Using Geothermal Energy
Volume I - Technical Proposal, GeoProducts Corporation,
 California Department of Water Resources, September 15, 1980

FIGURE 5.3 - PROJECT SCHEDULE

Filing of an Application for Exemption should be preceded by six months of documentation preparation. Input of prerequisite project decisions, engineering information and environmental data are indicated. Periods for accomplishing prerequisite activities and submitting information are interrelated and tasks must be accomplished at least two months before filing the Application.

Two schedules are shown; Figure IX-1a shows a proposed schedule based upon environmental data first being submitted as part of the application to the CEC for a Small Power Plant Exemption. Figure IX-1b shows an alternative schedule based upon submittal of environmental data to Lassen County as part of an early special use permit application prior to the CEC application. This alternative schedule would satisfy the County's desire for early involvement. The choice between these two schedules is a strategy decision to be made by the applicant.

CEC regulations specify 135 days for reaching a decision on the Application, although the statutory period permitted is 360 days. CEC regulations make provision for time extensions. The statutes require decisions on permits by local agencies within 180 days.

Figure IX-2 illustrates the schedule for obtaining a Small Power Plant Exemption in accordance with the identified CEC regulations.

4. Schedule for Acquiring Geothermal Exploratory Drilling Permit

An application for a geothermal exploratory drilling permit can be filed as soon as well site locations are determined. Statutes permit 135 days from the date the application is accepted as complete until the date that a CDOG decision is required.

5. Schedules for Acquiring County Special Use Permit

An application for a special use permit with the County of Lassen can be filed as soon as a project description is prepared. The County may accept the application as complete at that stage, or may deem the application incomplete until more environmental data is furnished. Timing of this application is a strategy decision to be made by the applicant, since the County Planning Director has indicated that an application must be filed before permitting information will be given.

FIGURE IX-2

SCHEDULE FOR OBTAINING SMALL POWER PLANT EXEMPTION

IX-2a

§ Section of Site Certification Regulation of the CEC, Title 20, California Administrative Code.

B. PERMITTING COSTS

1. Prerequisite Activities

Certain project characteristics must be disclosed or explained to the CEC which are derived from normal organization, planning, and engineering activities. If the project organization, planning and engineering have been accomplished according to schedule, only communications, consultations and documentation of work already completed directly related to the Application need be considered a cost of permitting.

On the other hand, all costs of consultants providing technical or environmental information in support of the Application requirements are logically allocated to the permitting process. These consulting specialists provide input for the Application as listed in Table IX-1.

Estimate To Perform Prerequisite Activities: \$ 487,800

2. Documentation Preparation

Prepare Application for Small Power Plant Exemption According to CEC Requirements.

Reference: Site Certification Regulations of the CEC Title 20
California Administrative Code, Section 1934-1939

Assume: Required project planning input has been provided.
Required design engineering input has been provided.
Required environmental input has been provided.

Activities to Include:

Preparation of outline for Application, identifying inputs required and submittal schedule.

Consultation with entities providing required inputs and coordination to meet schedule.

Assemble inputs provided and integrate into draft of Application document through review, editing and writing for consistency, and accuracy and in conformance with CEC requirements.

Review Draft of Application with and obtain approval of GeoProducts.

TABLE IX-1

ESTIMATED COSTS OF PREREQUISITE
ACTIVITIES ALLOCATED TO PERMITTING

TECHNICAL INFORMATION AND DOCUMENTATION OF PREVIOUS WORK

Project Developer (Organization and Planning)	\$ 10,000
Design Engineer	\$ 52,000
Forestry Consultant	\$ 24,000
Geothermal Reservoir Consultant	\$ 16,000
Subtotal	\$ 102,000

WORK PERFORMED IN SUPPORT OF APPLICATION

Environmental/Civil/Survey Consultant

Site Surveys and Mapping	\$ 12,000
Air Quality Monitoring Station Setup and Calibration	\$ 40,000
Air Quality Monitoring and Modelling Study	\$ 90,500
Site-Specific Vegetation and Wildlife Study	\$ 9,200
Geotechnical Investigation	\$ 18,500
Subsidence Surveys	\$ 13,000
Groundwater Study	\$ 16,000
Surface Water Study	\$ 3,000
Cultural Resources Study*	\$ 3,000
Industrial Hygiene Study	\$ 36,600
Noise Study	\$ 8,000
Land Use Study	\$ 8,000
Energy Impacts Study	\$ 7,000
Socio-Economic Study	\$ 5,000
Report Preparation and Graphics	\$ 20,000
Printing	\$ 4,000
Subtotal	\$ 293,800

Air Monitoring Equipment (Capital Investment)
(Table IX-2)

\$ 92,000

TOTAL \$ 487,800

- * Assuming no cultural resources are found which required data recovery or other extensive mitigation. Data recovery costs range from \$1,000 to \$1,500 per cubic meter. 2.5 to 5 percent excavation of a cultural site is usually required.

TABLE IX-2

TYPICAL AIR MONITORING STATION

Item to be Monitored	Instrument	Approximate Cost*
Wind Speed Wind Direction Temperature Barometric Pressure Relative Humidity Precipitation	Met One #120 or MRI #5115A	\$ 9,300
TSP and P _b	Anderson Hi-Vol Sampler 8" x 10" filters and controller	2,300
SO ₂	Monitor Labs #8850 or Thermo Electron 43	7,000
CO	Monitor Labs #8310 or Bendix #8501	3,200
O ₃	Dasibi #1003AH	5,000
NO _x	Monitor Lab #8840 or Thermo Electron 14B	6,300
Visibility	MRI Vista-range	8,000
Primary Data Logger	Monitor Labs #9300, 40 Chan. RS 232 with Thermal Printer	6,400
Primary Recording	Tectronics #4923 Data Cartridge	2,700
Secondary Recording	Multipoint Strip Chart Bristol or Leeds & Northrop	8,000
Air Monitor System and 3-Bay Rack	Monitor Labs #7000	5,000
Calibrator and Controller		5,100
Trailer with Dual Air Conditioners		6,500
Electrical Conditioning Unit		1,500
Permeability tubes, regulators, initial gases		3,500
	Subtotal	\$ 79,800
	15% Contingency Allowance**	11,970
	<u>TOTAL</u>	<u>\$ 91,770</u>
* 1980 catalog prices and estimates.		
** For equipment changes and price increases.	Say	\$ 92,000

Prepare master of Application and have copies prepared for submission to CEC.

Prepare transmittal and authentication documents for signature.

Submit Application for Exemption to CEC.

Prepare any responses for identification deficiencies required to obtain acceptance of the Application by the CEC.

Estimate to prepare Application for Exemption:

Permitting Specialist \$ 50,000

3. Prosecution Activities

Conduct Prosecution of Application for Exemption before the CEC to Final Decision.

Reference: Site Certification Regulations of the CEC Title 20, California Administrative Code, Sections 1940-1947.

Assume: Required project input has been provided.
Required design engineering input has been provided.
Required environmental input has been provided.

Activities to Include:

Coordination and preparation of all information requested by the CEC.

Coordinate Applicant's participation in and attend, as requested, prehearing conferences, site visits and formal hearings before the CEEC.

Prepare direct evidence, written testimony and relevant documentary evidence together with attesting forms for submittal to CEC as required for formal hearings.

Review proposed decision on the Application and advise applicant of potential concerns and post approval monitoring requirements.

Estimate to prosecute Application for Exemption before CEC:

Permitting Specialist \$ 17,000

Support required during hearings on the Application
are estimated to be:

Project Developer \$ 2,000

Engineering \$ 5,000

Consulting Specialists

Geotechnical Consultant \$15,000

Environmental/Civil/Survey Consultant \$28,000

Forestry Consultant \$ 6,000

Geothermal Consultant \$ 4,000

Subtotal

\$ 53,000

\$ 77,000

4. Estimate of costs to file and complete prosecution of ancillary permits:

	<u>Preparation</u>	<u>Prosecution</u>	<u>Fees</u>
U.S.E.P.A.	\$ 2,000	\$ 2,000	\$
California P.U.C. (unless exempt)	\$ 2,000		\$ 75
CAL-O.S.H.A.	\$ 1,000		
S.W.M.B.	\$ 1,000		<\$ 500
L.R.W.Q.C.B.	\$ 2,000	\$ 1,000	>\$ 100
L.C.A.P.C.D.	\$ 2,000	\$ 2,000	\$ 20
Hearing Board			\$ 40
Permit Fee			\$ 150
Analysis Fee and Technical Reports at Cost			
Lassen County Planning Commission	\$ 2,000	\$ 2,000	<\$ 155
Lassen County Public Works	\$ 1,000	\$ 500	
Lassen County Health Department	\$ 1,000		
TOTALS	\$14,000	\$ 7,500	>\$1,000

NOTE: ALL COSTS ARE ESTIMATED AT JANUARY 1981 PRICES.
ADJUSTMENTS DUE TO INFLATION MAY BE ANTICIPATED.

CONTENTS OF APPLICATION FOR EXEMPTION

INTRODUCTION:

- a. Need
- b. Fuel Resource: Wood Residue
Geothermal

- c. Project Description
- d. Schedule

I. FACILITY DESCRIPTION

- A. Location (topo maps with plant site, wells, transmission line, roads, etc.)
- B. Appearance (photographic representation: power plant and environs, transmission line corridor)

II. FUEL RESOURCES

- A. Wood Residue
- B. Geothermal

III. METHODS OF CONSTRUCTION AND OPERATION

- A. Engineering Descriptions
 - 1. Power Generation System
 - 2. Heat Dissipation System
 - 3. Cooling Water Supply System
 - 4. Atmospheric Emission Control System
 - 5. Waste Disposal System
 - 6. Noise Abatement System
 - 7. Reinjection System
 - 9. Geothermal Resource Conveyance Lines

10. Electric Transmission Facilities

- a. Map of Proposed Routes
- b. New or Additional Transmission Facilities
- c. Justification for Route and Facilities
 - (1) Environmental Effects
 - (2) Construction and Operation Costs
 - (3) Reliability of Facilities

B. Construction Plans

- 1. Site Preparation
 - a. Geothermal Well Pads
 - b. Power Plant Site
- 2. Grading and Drainage Plans
- 3. Excavation, Foundations and Underground
- 4. Structural
- 5. Equipment Installation
- 6. Piping, Electrical and Controls

C. Operating Methods

- 1. Wood Fuel
 - a. Collection
 - b. Processing
- 2. Geothermal Resource
 - a. Collection
 - b. Use

Table X-1 (Continued)

3. Power Plant Operation (Automatic/Manual)

- a. Fuel Preparation
- b. Feed Water Treatment
- c. Boiler Operation
- d. Turbine/Generator
- e. Electrical Distribution
- f. Waste Disposal
 - (1) Solid Waste
 - (2) Liquid Waste
- g. Auxiliaries

IV. ENVIRONMENTAL AND ENERGY IMPACTS

- A. Significant Adverse Effects
- B. Specific Measures to Mitigate Impact
- C. Air Quality
 - 1. Baseline Data
 - 2. Meteorological Data
 - 3. Discuss if (1) and (2) are Typical, Describe Monitoring Program
 - 4. Normal and Shutdown Modes of Operation
 - 5. Chemical and Particulate Pollutants
 - 6. Project Impact Analysis
- D. Terrestrial Environment
 - 1. Map of Soils at Site and Within Leasehold
 - 2. Vegetation Communities
 - 3. Assessment of Construction Effects on Soils
 - 4. Assessment of Operation Effects on Agriculture

E. Wildlife Habitat

1. Identify Species of Special Concern
2. Map of Protected, Rare, Threatened or Endangered Species
3. Describe Potential Effects of the Project

F. Water Resources

1. Surface Waters
2. Precipitation, Storm Runoff and Flood Potential
3. Ground Waters
4. Liquid Discharges
5. Potential Project Impact

G. Cultural Resources

1. Listed Cultural Resources
2. Map of Cultural Resource Properties
3. Method to Identify Cultural Resources
4. Map of Land Uses
5. Social and Economic Setting

H. Noise

1. Ambient Noise Surveys
2. Map with Noise Sensitive Receptors
3. Major Plant Noise Sources
4. Estimate Construction and Operation Noise Levels

V. MITIGATION MEASURES**A. Wood Refuse Collection**

B. Geothermal Resource Development

1. Well Pad Preparation
2. Well Drilling
3. Collection System

C. Power Plant

1. Construction
 - a. Air
 - b. Water
 - c. Noise
 - d. Esthetics
2. Operation
 - a. Air
 - b. Water
 - c. Noise
 - d. Esthetics

VI. NEED FOR PROJECT

- A. Conformity with Statewide Demands/§ 25309
- B. Energy and Capacity Balance/§ 25309(b)
- C. Anticipated Generating Capacity
 1. Expected Annual Capacity Factor (12-year forecast period)
 2. Expected Average Annual Capacity Factor (over the anticipated life of the facility)

VII. COMPATIBILITY WITH BIENNIAL REPORT

VIII. APPLICABLE LAWS, ORDINANCES, STANDARDS, PERMITS AND APPROVALS

- A. Table of Matrix of Laws, etc.: Applicability and Where Conformance Discussed**
- B. Agency with Jurisdiction**
- C. Identification of Agency Official**
- D. Schedule of Permits**

IX. DISPOSITION OF GENERATING CAPACITY

Intro (d) Proposed Project Schedule

Intro (a) Project Participants

Table X-2

SUMMARY OF AIR RESOURCE ENVIRONMENTAL INFORMATIONAL NEEDS

A. METEOROLOGICAL AND CLIMATOLOGICAL MONITORING - should include

1. instrumentation selection
2. siting
3. data logging and reduction
4. quality assurance procedures
 - for a. wind system evaluation
 - and b. temperature, humidity, radiation, mixing height, precipitation and visibility

B. AIR QUALITY MONITORING - should include

1. instrumentation selection
2. siting
3. data logging and reduction
4. quality assurance procedures
 - for a. selection of pre-construction air quality monitoring parameters
 - and b. selection of post-construction air quality monitoring parameters

C. AIR QUALITY IMPACT ANALYSIS

1. air quality impact analysis screening
 - a. pre-construction air quality monitoring parameter selections
 - i. document low levels of CO, NO₂ and SO₂ from CARB records.
 - ii. measure TSP and ozone
 - b. post-construction air quality monitoring parameter selections
2. air quality impact analysis for
 - a. New Source Review (NSR) for Northwest Plateau Air Basin
 - b. Prevention of Significant Deterioration (PSD) for CARB
 - c. Best Available Control Technology (BACT) for EPA, if suggested by CARB

Table X-2

(Continued)

- d. Notice of Intention (NOI) for CEC
- e. Application for Certification (A/C) for CEC
- f. Authority to Construct (A/C) for CEC
- g. Permit to Operate (P/O) for CEC
- h. Environmental Impact Report (EIR) for CEC if Small Power Plant Exemption is not used.
- i. Small Power Plant Exemption (SPPE) for CEC