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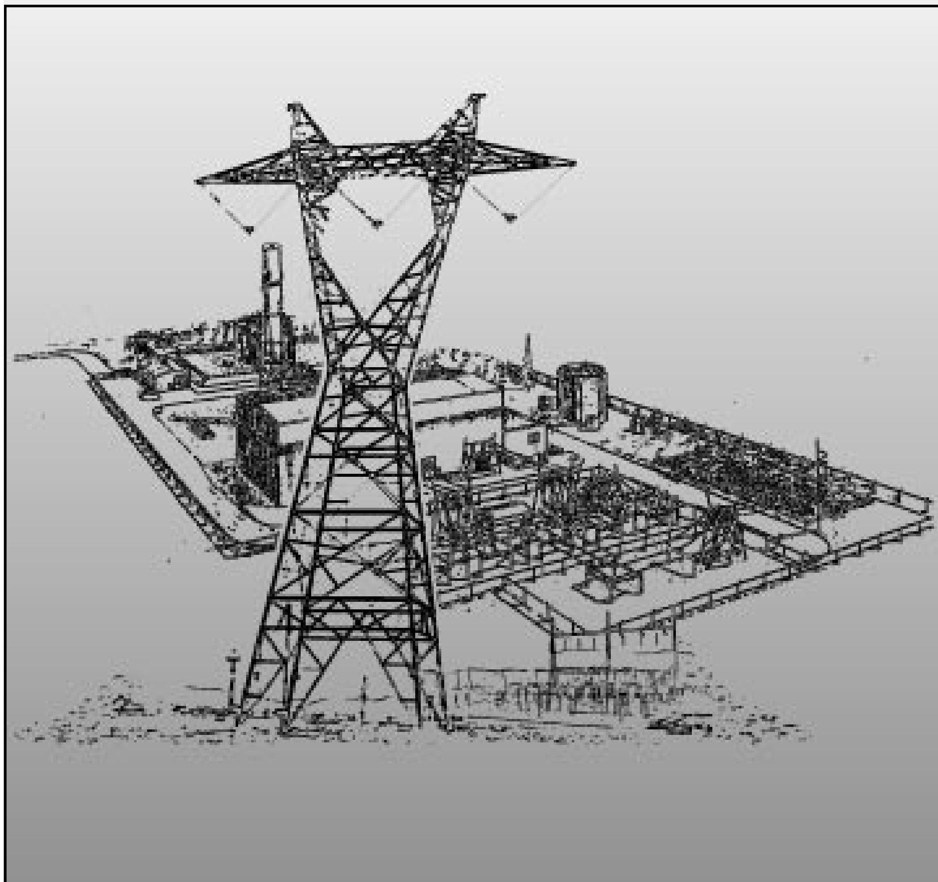

Bonneville
POWER ADMINISTRATION

DOE/FEIS-0201

July 1994

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COYOTE SPRINGS COGENERATION PROJECT

Administrator's
Record of Decision

ON

**PORTLAND GENERAL ELECTRIC COMPANY'S
REQUEST FOR TRANSMISSION SERVICE**

**BONNEVILLE POWER ADMINISTRATION
U.S. DEPARTMENT OF ENERGY
September 1994**

Summary

The Bonneville Power Administration (BPA) must make prudent use of the transmission facilities of the Federal Columbia River Transmission System (FCRTS), including using these facilities to transmit non-Federally generated power. Additionally, as the Federal owner and operator of the primary transmission facilities in the Pacific Northwest, BPA must provide to non-Federal parties reasonable access to FCRTS capacity for intra-regional transactions.

BPA has provided access to intra-regional transmission capacity under the provisions of the Regional Preference Act, the Transmission System Act, the Northwest Power Act, and the Energy Policy Act of 1992. In February 1993, Portland General Electric Company (PGE) requested that BPA transmit power from its Coyote Springs development over the FCRTS to its customers in the Portland Metropolitan Area. PGE also requested that BPA begin electrical system planning and environmental studies.

The Coyote Springs Cogeneration Project is a proposed natural gas-fired cogeneration power plant near Boardman, Oregon. The proposed power plant would be built on a g-hectare (22-acre) site in the Port of Morrow Industrial Park. The plant would have two combustion turbines that would generate 440 average megawatts of energy when completed. The proposed plant would be built in phases. The first combustion turbine would be built as quickly as possible. Timing for the second unit is uncertain.

BPA conducted an analysis of existing system facilities that showed that under most operating conditions the FCRTS is capable of accommodating the output of the first combustion turbine (220 aMW). To connect the proposed plant to BPA's transmission grid, a proposed double-circuit, 500-kV transmission loop line would be built from the McNary-Slatt transmission line to a new substation located at the plant site, a distance of about 2.4 km (1.5 miles). Microwave communication facilities would be built to connect the plant with BPA's existing communications network.

Pacific Gas Transmission Company (PGT) proposes to build a new pipeline to supply gas for the plant. The 29.8-km (18.5-mile) pipeline will connect to its main natural gas transmission pipeline, which runs from the Canadian/Idaho border to Malin, Oregon. The Federal Energy Regulatory Commission (FERC) is a cooperating agency for this EIS. FERC plans to distribute an Environmental Assessment addressing the environmental impacts of the Coyote Springs and Medford Lateral pipelines in fall 1994.

In accord with the procedural requirements of the National Environmental Policy Act (NEPA), BPA began an environmental study of the proposed project in June 1993. BPA conducted an EIS scoping process in June and July 1993, issued a Draft EIS in January 1994, and distributed the Final EIS in July 1994. A Notice of Availability for the Final EIS was published in the *Federal Register* on July 29, 1994. The last step in the NEPA process is to issue a public Record of Decision (ROD), which provides a concise public record of BPA's decision on request that BPA provide transmission services for its Coyote Springs Cogeneration Project.

The Final EIS provides information pertinent to decisions about offering PGE transmission services for the output of the Coyote Springs Cogeneration Project. The Final EIS documents PGE's need for intra-regional transmission service, and BPA's responsibility to provide that service. The Final EIS also describes the environmental consequences that would result from a BPA decision to provide transmission services. Public comments on the Draft EIS as well as BPA's responses are provided in the Final EIS.

The Final EIS identifies environmental impacts likely to result from the proposed project and identified mitigation measures proposed to reduce these impacts. The Final EIS, and public involvement throughout the EIS process, provide no evidence that the project would be environmentally unacceptable or would fail to comply with Federal, state or local environmental laws or standards.

This Record of Decision documents BPA's decision to revise its general transmission agreement with PGE to establish Unit 1 of Coyote Springs as a point of interconnection for transmission wheeling services. For these services PGE will pay BPA about $3,000,000 annually.

BPA's Decision

This Record of Decision documents my decision to authorize the use of the FCRTS to transmit power from Unit 1 of PGE's proposed Coyote Springs Cogeneration Plant to the Portland Metropolitan Area. This decision would be achieved by building the proposed transmission facilities that are required to interconnect the proposed plant with the FCRTS and by revising the general transmission agreement with PGE to establish Coyote Springs as a point of interconnection for wheeling services..

Authority

BPA owns and operates the Federal Columbia River Transmission System (FCRTS), which consists of 23,813 circuit kilometers (14,797 circuit miles) of transmission line (including the Pacific Northwest AC and DC Interties), and 389 associated substations. The FCRTS provides approximately three-fourths of the transmission capacity in BPA's service area. BPA's service territory includes Oregon, Washington, Idaho, western Montana and parts of Wyoming, Nevada, Utah, and California.

BPA is required to provide access to excess FCRTS capacity on a fair and nondiscriminatory basis in accordance with the following statutory directives:

Regional Preference Act of 1964: "Any capacity in Federal transmission lines ... which is not required for the transmission of Federal energy ... shall be made available as a carrier for transmission of other electric energy between such areas . . . . No contract for the transmission of non-Federal energy on a firm basis shall be affected by any increase, subsequent to the execution of such contract, in the requirements for transmission of Federal Energy ... or other electric energy."

Transmission System Act of 1974: "The Administrator shall make available to all utilities on a fair and nondiscriminatory basis, any capacity in the Federal transmission system which he determines to be in excess of the capacity required to transmit electric power generated or acquired by the United States."

Pacific Northwest Electric Power Planning and Conservation Act of 1980: "The Administrator shall furnish services, including transmission ... unless he determines such services cannot be furnished without substantial interference with his power marketing program ... Subject to (1) any contractual obligations of the Administrator, (2) any other obligations under existing law, and (3) the availability of capacity in the Federal transmission system, the Administrator shall provide transmission access ...."

Energy Policy Act of 1992: "(il) Laws applicable to the Federal Columbia River Transmission System. (1) The Commission shall have authority ... to (A) order the Administrator of the Bonneville Power Administration to provide transmission service and (B) establish the terms and conditions of such service. In applying such sections to the Federal Columbia River Transmission System, the Commission shall assure that – (il) the provisions of otherwise applicable Federal laws shall continue in full force and effect and shall continue to be applicable to the system ...."

Request for Transmission from Portland General Electric Company

On February 19, 1993, PGE submitted a request for transmission wheeling services from its proposed Coyote Springs Cogeneration Plant in Boardman, Oregon. Since receipt of this request, BPA has completed an evaluation of available capacity in the transmission system and conducted an environmental review in accordance with NEPA. The results of these studies are summarized below.

Adequacy of System to Provide Requested Transmission Service

System analysis studies determined that under most operating conditions sufficient capacity is available to wheel power from Phase 1 (220 aMW) of the Coyote Springs Plant. If PGE decides to build the second combustion turbine, BPA will reevaluate the transmission system, and provided sufficient capacity exists, will also integrate the second unit. If insufficient capacity exists, BPA would consider a range of service options including providing nonfirm service and building new transmission or substation facilities. If new facilities are required to integrate the second unit, additional environmental analysis will be completed and if required, a Supplement to the EIS will be prepared.

Environmental Analysis

BPA began an environmental study of the proposed project in June 1993. BPA completed an EIS scoping process in July 1994, a Draft EIS in January 1994, and a Final EIS in July 1994. The Coyote Springs Cogeneration Project Final EIS was mailed to about 250 agencies, groups, and individuals. A Notice of Availability for the Final EIS was published in the *Federal Register* on July 29, 1994.

In accordance with Council on Environmental Quality Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (CEQ Regulations), this Record of Decision provides a concise public record of BPA's decision to provide transmission services to PGE for its Coyote Springs Cogeneration Project.

The CEQ Regulations at 1505.2 set forth points which must be covered in a ROD for actions for which an environmental impact statement was prepared. A-ROD must state what the decision is; identify all alternatives considered by the agency specifying which were considered to be environmentally preferable; discuss all relevant decision factors including economic and technical considerations, agency statutory missions and balancing of national policy considerations, and discuss practicable means which may be available to avoid or minimize environmental harm from the alternative selected. BPA's decision was described previously under **BPA's Decision.**

Alternatives Studied in the EIS

The Final **EIS** evaluated the environmental impacts of two alternatives for the Coyote Springs Cogeneration Project: (1) No Action, and (2) the Proposed Action.

Under the No Action alternative, BPA would decide not to execute a transmission agreement with PGE. Without access to the Federal transmissionsystem, the project would not be economically viable, and would not be built. Environmental impacts associated with constructing and operating the power plant and related facilities would not occur.

The Proposed Action would have the following elements:

- A double-circuit 500-kV transmission loop line would be built from a tap point on BPA's McNary-Slatt line to the Coyote Springs Cogeneration Plant, a distance of about 2.4 km (1.5 miles).

- Microwave communication facilities would be installed at the plant and other remote sites to connect the plant with BPA's communications network.

- PGE would construct and operate a 440 aMW gas-fired cogeneration plant (initially 220 on a site within the Port of Morrow Industrial Park near the City of Boardman, Oregon.

- PGE would construct an electrical substation at the Coyote Springs plant site to carry out electrical functions, to minimize safety risk, and to accommodate operations and maintenance.

- PGT would build a 29.8-km (18.5-mile) 30-cm (12-inch) pipeline from PGT's main transmission line to the plant site.

- PGE would pay BPA approximately $2,000,000, plus operation and maintenance charges to integrate the Coyote Springs Project into the FCRTS.

- The BPA/PGE General Transmission Agreement would be revised to establish the Coyote Springs Cogeneration Plant as a point of interconnection for wheeling services. The revised agreement would cover wheeling for power from the first combustion turbine (220 aMW). When operation of the first unit begins, PGE would pay BPA about $3,000,000 annually for wheeling services.

Summary of Impacts and Discussion of Environmentally Preferable Alternative

The most noteworthy impacts of the Proposed Action as reported in the Final EIS are: (1) the plant would emit oxides of nitrogen and carbon monoxide in significant quantities, however National Ambient Air Quality Standards of the U.S. Environmental Protection Agency are not exceeded; (2) the plant would emit lesser quantities of particulate matter, sulfur dioxide, and volatile organic compounds; (3) groundwater withdrawals for the plant would reduce Columbia River flows at downstream dams and thereby reduce hydropower production by 1,000,000 kWh (lost BPA revenues of $60,000 annually); (4) the plant, transmission line and pipeline could impact fish and wildlife particularly during construction, however no impacts to threatened or endangered species are predicted; (5) ground disturbance may cause increased soil erosion and soil compaction; (6) construction processes would create noise impacts as would operation of the plant, however Oregon noise standards would be met; (7) long-term employment would increase by 20-30 people at the plant site; (8) there will be increased demand for housing during construction of the plant, transmission line and pipeline; (9) the plant and trasmission loop line will create visual impacts; (10) the proposed new facilities will increase the assessed property value (and tax revenues) in Morrow County; (11) construction vehicles may cause traffic impacts.

The No Action alternative would be the environmentally preferred alternative since it would avoid all adverse effects of the development of the Coyote Springs Cogeneration Project. The No Action alternative, however, would not meet BPA's obligation to provide transmission access nor meet PGE's need to replace energy lost by closing the Trojan Nuclear Power Plant. There is a fair likelihood that PGE would build a project of similar size and type in a different location because its need for energy would remain. PGE could also acquire an equivalent amount of energy from independent power producers.

Avoidance of Environmental Harm

Though the Proposed Action will have environmental impacts, the predicted impacts are: (1) at least partly mitigated due to proposed mitigation and monitoring measures; (2) do not pose a clear risk to human health or safety; (3) do not irreversibly or irretrievably damage the environment; and (4) do not exceed Federal, state or local environmental standards.

Need for Mitigation

Mitigation measures proposed that could be taken to reduce predicted impacts are reported in Chapter 5, Environmental Consequences, of the Final EIS.

The Final EIS showed that residual environmental impacts are generally minor and do not exceed environmental quality standards. Public comments on the EIS have not questioned the magnitude nor the extent of impacts reported in the EIS. A letter from the Environmental Protection Agency however, makes an important comment on cumulative global warming impacts. EPA states, "this [cumulative CO, emissions] is a very significant impact...." At the time the Final EIS was written, PGE had not decided to include CO, offset mitigation (tree planting) in their proposal. In consideration of EPA's concern, BPA has asked PGE to give consideration to including tree planting to offset CO, emissions from the Coyote Springs Cogeneration Plant. No decision has been made as of this date.

Considering that CO2 is not a regulated air emission substance, and the otherwise low impact of the Proposed Action, BPA considers the overall environmental impact of the project to be acceptable and does not believe additional mitigation is essential to make a favorable decision on PGE's request for wheeling services.

Decision Authorization

I have reviewed and hereby approve this decision to offer the transmission contract to Portland General Electric Company as described herein.

Issued in Portland, Oregon, on Sept. 9, 1994.

Randall W. Hardy, Administrator

9/9/94
Date

DOE/BP-2456
September 1994
550

Coyote Springs Cogeneration Project

Final Environmental Impact Statement

Final Environmental Impact Statement

DOE/EIS-0201

Responsible Agency: U.S. Department of Energy, Bonneville Power Administration (BPA)
Cooperating Agency: Federal Energy Regulatory Commission
Title of Proposed Action: Coyote Springs Cogeneration Project
State Involved: Oregon

Abstract: BPA is considering whether to move (wheel) electric&l power from a propdsed privately-owned, combustion-turbine electrical generation plant in Oregon. The plant would be fired by natural gas and would use combined-cycle technology to generate up to 440 average megawatts (aMW) of energy. The plant would be developed, owned, and operated by Portland General Electric Company (PGE). The project would be built in eastern Oregon, just east of the City of Boardman in Morrow County. The proposed plant would be built on a site within the Port of Morrow Industrial Park located within the City of Boardman's urban growth boundary. The proposed use for the site is consistent with both the City of Boardman and Morrow County Comprehensive Plans. Building the transmission line needed to interconnect the power plant to BPA's transmission system would require a variance from Morrow County to cross land zoned MG (General Industrial). BPA would transfer power from the plant to its McNary-Slatt 500-kV transmission line. PGE would pay BPA for wheeling services.

BPA mailed the Draft EIS (DEIS) to about 250 agencies, groups, and individuals. A 45-day public review period ended on March 21, 1994. An open house format public meeting was held in Boardman on February 24, 1994 to review and receive comments on the DEIS. Six open house attendees made 15 comments. -Thirteen comment letters or comment forms were received. Most public comments on the DIES were supportive. Two cornmentors requested clarification of impacts to surface and groundwater resources, and an expanded discussion of cumulative impacts.

The Final EIS (FEIS) looks much like the DEIS. Paragraphs containing changes are highlighted by a dark vertical line along the left margin. Chapter 9 contains public comments, responses and copies of comments received. Additional appendices have been added in the FEIS in response to public comments.

BPA's proposed action has not changed. BPA proposes to build a transmission line and microwave facilities to connect the Coyote Springs Cogeneration Plant with BPA's existing transmission grid. BPA also proposes to revise transmission agreements with PGE to establish the Coyote Springs Plant as a new point of interconnection with PGE for wheeling services. This agreement would cover wheeling of power from the first combustion turbine. If PGE decides to complete the second turbine, BPA will evaluate the capabilities of the transmission system, and if sufficient capacity exists, will provide similar services for this unit.

PGE has made two significant changes 'in the Coyote Springs Cogeneration Plant design since the DEIS was issued. -The plant design was changed so that nitrous oxide (NO.) emissions are reduced by one-half. The proposed plant's water sources have also changed". Water requirements for-the plant will now be supplied totally by existing Port of Morrow wells.

The route of Pacific Gas Transmission Company's proposed natural gas pipeline has changed-slightly since publication of the DEIS. Maps in the FEIS have been revised to show the new pipeline route.. The Federal Energy Regulatory Commission has decided to prepare an environmental assessment addressing the environmental impacts of the Coyote Springs Extension pipeline.

BPA expects to issue a Record of Decision (ROD) in August 1994. The ROD will be mailed to agencies, groups, and individuals on the project mailing list.

To request copies of the FEIS or ROD please contact BPA's toll-free document request line, I-800-622-4520 or:

Public Involvement Manager
Bonneville Power Administration
P. 0. Box 12999
Portland, Oregon 97212

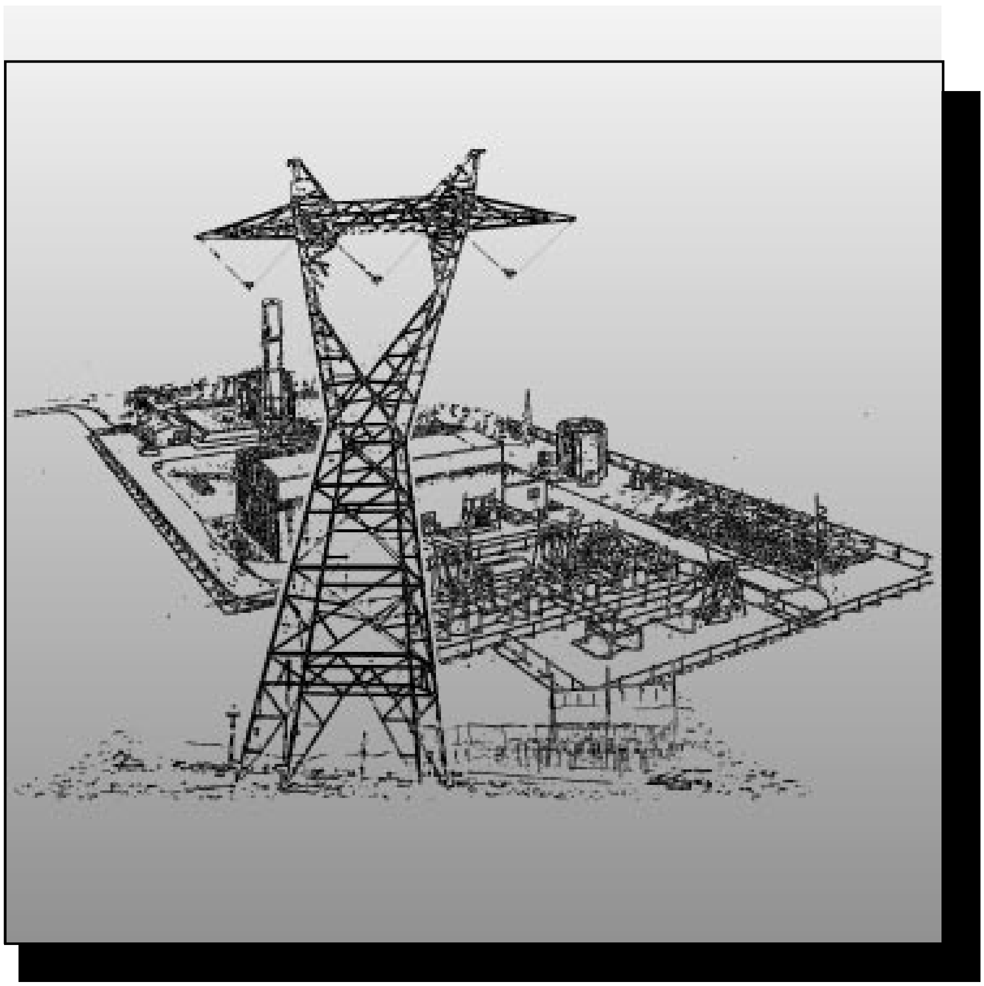
For more information on the FEIS please contact:
Ken Barnkart **- EFBG**
Bonneville Power Administration
P. 0 Box 3621,
Portland, Oregon 97208
(503) 230-3667

For information on DOE NEPA activities contact:

Carol Borgstrom, Director
Office of NEPA Oversight EH-25
U.S. Department of Energy
1000 Independence Avenue S. W.
Washington, D. C. 20585
(202) 586-4600 or
(800) 472-2756

Final Environmental Impact Statement

Coyote Springs Cogeneration Project
Morrow County, Oregon



DOE/FEIS-0201

July 1994

Bonneville
POWER ADMINISTRATION

DOE/BP-2430
July 1994
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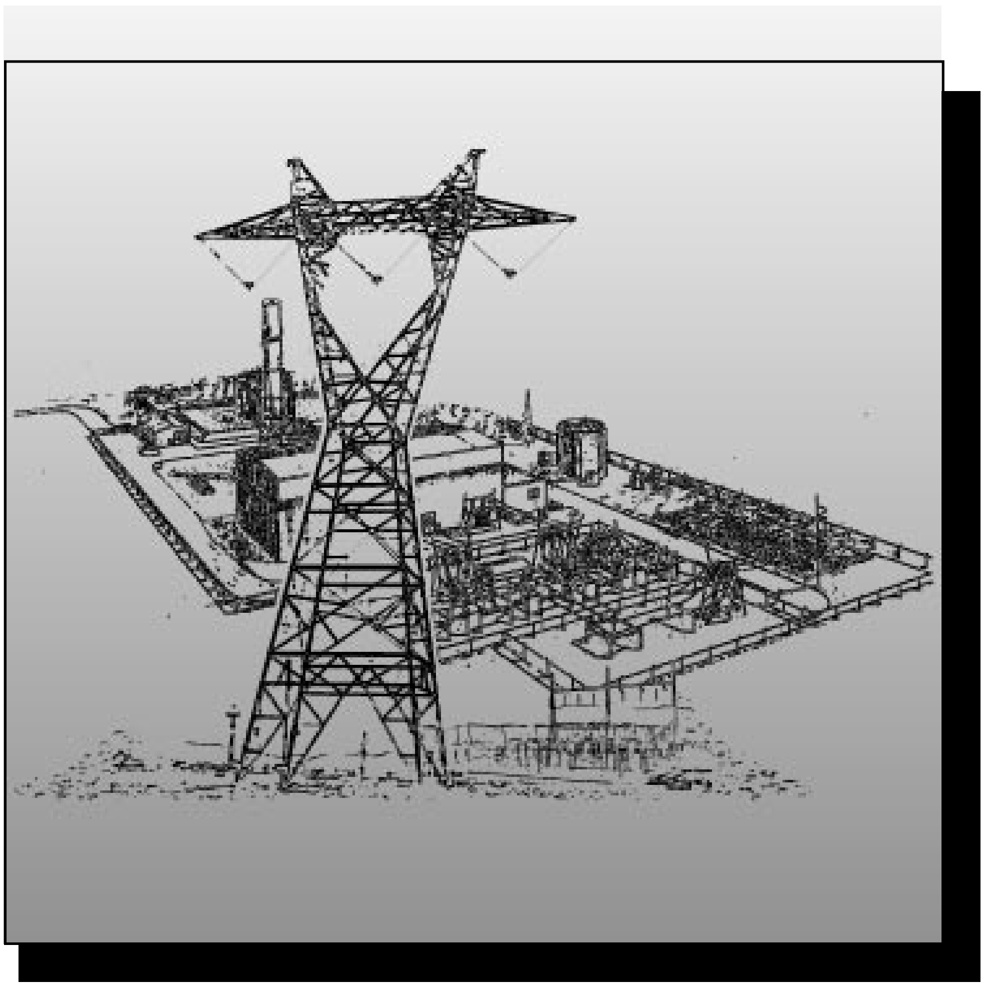
Coyote Springs Cogeneration Project

Final Environmental Impact Statement

Final Environmental Impact Statement

Coyote Springs Cogeneration Project
Morrow County, Oregon



DOE/FEIS-0201

July 1994

Bonneville
POWER ADMINISTRATION

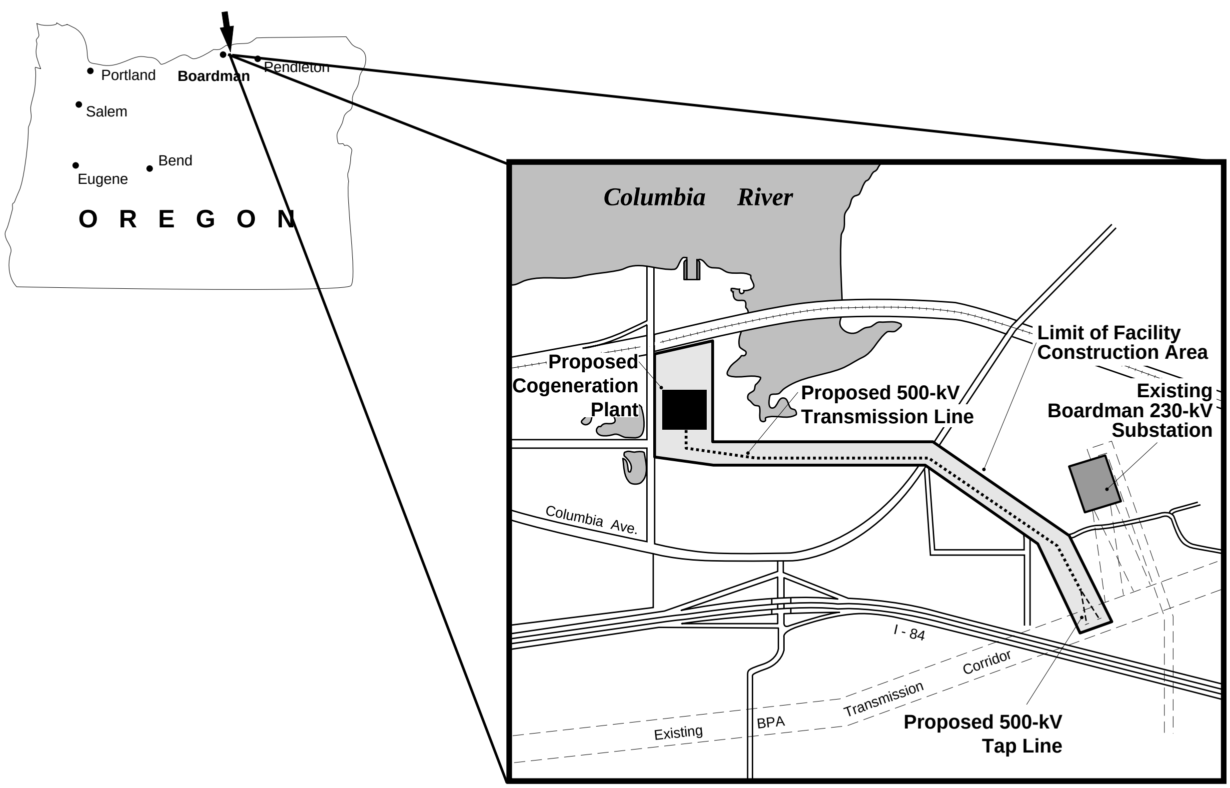
1. Introduction

Congress gave Bonneville Power Administration (BPA) the responsibility to supply electrical power to its utility, industrial, and other customers in the Pacific Northwest. Congress also directed BPA to build and operate high-voltage ***transmission lines*** to move electric power from hydroelectric dams, and ***generation*** plants fired by many types of fuel.

BPA owns and operates over 24,000 circuit kilometers (km*) (15,000 miles) of transmission lines in the Pacific Northwest. These transmission lines are used by both public and private electric utilities to transmit and market power throughout the region.

Portland General Electric (PGE), an investor-owned utility, has asked BPA to transmit power from its proposed Coyote Springs Cogeneration Plant to PGE's customers in Portland, Oregon. PGE plans to build the ***cogeneration*** plant in eastern Oregon, just east of the City of Boardman (see Figure 1-1). Cogeneration plants typically generate electricity in combination with a heat-producing process. The Coyote Springs Cogeneration Plant would use ***natural gas*** to produce electricity and steam.

Figure 1-1
Project Location



* *BPA uses metric measurements to comply with Public Law 100-418. See metric conversion chart on the inside of the back cover.*

The Coyote Springs Project would have two ***combined-cycle combustion turbines (CTs)*** with a total electrical output of 440 ***average megawatts (aMW)***. The proposed plant would be built in phases. The first combustion turbine would be built as quickly as possible. Timing for the second combustion turbine is uncertain. It is also planned that the plant would supply steam to steam customers. A 500-***kilovolt (kV)*** transmission line would be built to interconnect the plant with a nearby BPA transmission line. A natural gas pipeline spur would be built by Pacific Gas Transmission Company (PGT) from a point on their existing pipeline northeast of Ione, Oregon, to the plant site. The proposed cogeneration plant, transmission line, and natural gas pipeline are parts of a single project.

BPA has assumed the role of lead agency for the Federal EIS on the Coyote Springs Cogeneration Project. The ***Federal Energy Regulatory Commission (FERC)*** is a ***cooperating agency***. In July 1993, BPA published a Notice of Intent to prepare an ***environmental impact statement*** (EIS) to help decide whether to wheel power from PGE's proposed Coyote Springs Cogeneration Plant through BPA's ***transmission*** system. A Draft EIS (DEIS) that addressed all potential impacts of the proposed project was completed in January 1994. This Final EIS (FEIS) responds to public comments on the DEIS and provides updated information on the project. BPA expects to issue a ***Record of Decision*** concluding its decision process in 30 days following completion of the FEIS. The probable BPA decision, as described in the DEIS and restated here, will be to wheel power produced by Phase I of the Coyote Springs Cogeneration Plant to PGE customers in the Portland area.

FERC must issue a Certificate of Public Convenience and Necessity for PGT's 1995 Construction Program, which proposes two new pipelines, the Coyote Springs Extension Pipeline which is 28.8 km (18.5 miles) in length, and the Medford Extension Pipeline which is 139.2 km (86.5 miles) in length. FERC will prepare an ***environmental assessment*** on PGT's 1995 Construction Program to satisfy its NEPA requirements. Information on the environmental impact of the Coyote Springs Extension that is reported in this FEIS was abstracted from PGT's application to FERC in Docket No. CP93-618-000 and CP93-618-001.

Oregon's Energy Facility Siting Council (EFSC) is currently evaluating PGE's *Application for a Site Certificate on the Coyote Springs Cogeneration Project*. Oregon's site evaluation process, like the ***National Environmental Policy Act (NEPA)*** process, provides opportunity for public participation. BPA is coordinating its NEPA process with the state. The Oregon Department of Energy issued a "Proposed Order" approving PGE's application for a site certificate for construction and operation of the Coyote Springs Cogeneration Project on January 10, 1994. Oregon is currently conducting a Contested Case proceeding as provided for in Oregon statutes. A "Final Order" approving PGE's application for site certificate is expected to be issued by EFSC in mid-September 1994. Construction of the project is scheduled to begin in September 1994 following issuance of the site certificate.

1.1 Public Involvement

The process to find out the concerns individuals, groups and agencies may have about a proposed project is called ***scoping***. BPA's Notice of Intent included a 30-day scoping period, which ended August 6, 1993. During the scoping period, BPA accepted comments about issues to be addressed in this FEIS.

BPA also held a public scoping meeting at Riverside High School in Boardman, Oregon on July 29, 1993. The public meeting was announced in the Notice of Intent, local newspaper ads, and in a notice sent to those on the project mailing list including Federal, state, and local governments; environmental organizations; and landowners within 2 km (1.2 miles) of the site.

PGE prepared a fact sheet to help people understand key elements of the project.

Comments received during the scoping meeting and through written communication included these issues:

- Air quality impacts
- Noise impacts
- Water resources impacts
- Farmland impacts
- Water vapor impacts to transportation
- Economic development and employment impacts
- Electromagnetic field impacts to health and safety
- Visual impacts
- Consistency with local comprehensive plans

Issues identified during the scoping process were discussed in the DEIS which BPA completed and mailed to about 250 agencies, groups, individuals and nearby ***depository libraries*** in January 1994. A 45-day public review period ended on March 21, 1994. A public meeting with an open house format was held in Boardman on February 24, 1994 to review and receive comments on the DEIS. Chapter 9 of this FEIS records, categorizes, and provides responses to comments on the DEIS. This FEIS also provides updated information on the design of the project.

BPA will use the FEIS to help decide whether to provide wheeling services to PGE. No action can be taken on the transmission part of this project until 30 days after the FEIS is made public. BPA will prepare a ***Record of Decision*** (***ROD***) that explains BPA's decision on the project. BPA will mail the ROD to those agencies, groups and individuals on the project mailing list.

2. Purpose and Need for Action

BPA's transmission lines are used by both public and private electric utilities to transmit and market power. If BPA has excess ***capacity*** on its transmission system, utilities or independent power producers can purchase capacity to carry power where it is needed. Using BPA's transmission system to move power from one system to another system is called ***"wheeling."*** PGE has asked BPA to wheel power from PGE's proposed Coyote Springs Cogeneration Plant over BPA's 500-kV McNary-Slatt transmission line to the Portland, Oregon metropolitan area. The proposed Coyote Springs Cogeneration Plant site is close to this BPA transmission line.

2.1 Need for Action

BPA's Need - BPA needs to decide whether to provide wheeling services to PGE from the proposed Coyote Springs Cogeneration Plant over BPA's McNary-Slatt 500-kV transmission line. (Pub. Law 102-486, Sub. B., Sec. 722 (3) (i).) BPA evaluated power loadings on the McNary-Slatt transmission line and determined that sufficient capacity is available on this line to wheel power from the Coyote Springs Plant for Phase I (220 aMW).

Wheeling power from PGE's proposed power plant would fulfill BPA's obligation under Federal laws to provide wheeling services if excess capacity exists on BPA's transmission system. A decision to provide wheeling services would require amending an existing transmission agreement BPA has with PGE for such services. PGE would pay BPA for providing wheeling services.

PGE's Need - PGE's need for constructing the proposed project is separate from BPA's. PGE's need is to replace power lost when PGE's Trojan Nuclear Power Plant (Trojan) ceased operation. The Coyote Springs Cogeneration Project would replace a significant portion of power lost from Trojan. Trojan provided PGE with 481 aMW of energy.

On January 4, 1993 PGE announced it would permanently close Trojan on April 1, 1996. Trojan has not generated power since the closure was announced. Finding energy resources to replace the ***energy*** supplied by Trojan is an immediate need for PGE. This need was particularly apparent in the winter of 1992-93 when consumer demands for energy exceeded PGE resources.

The Coyote Springs Cogeneration Plant would replace 440 aMW of energy previously provided by Trojan. The facility would be constructed in two phases (220 aMW each). The first phase would be completed as quickly as possible to counter adverse economic impacts associated with Trojan's closure. The timing of the second phase is uncertain.

PGE's loads and resources forecast for 1993-2003 shows resource deficits increasing for each successive year. Resource deficits range from 104 MW in 1993-94 to 884 MW in 2003-04.

PGE’s 1992 Integrated Resource Plan identified a Least Cost Plan to meet their customers' energy needs. PGE’s preferred resource strategy proposed a wide range of new energy resources:

- 314 aMW of energy efficiency
- 100 aMW of renewable resources (wind and geothermal)
- 100 aMW from repowering the existing Beaver CT plant
- 260 aMW from various other resources, including cogeneration
- Replacing Trojan with resources that have operating, cost and environmental characteristics of gas-fired, combined-cycle CTs
- Building or acquiring 500 aMW of combined-cycle CT power by 1996

PGT's Need - The proposed Coyote Springs Natural Gas Pipeline Extension is needed to enable PGT to transport natural gas to PGE's proposed plant. The Coyote Springs extension would be supplied by PGT's mainline, which runs from the Canadian/Idaho border to Malin, Oregon.

FERC must issue a Certificate of Public Convenience and Necessity for the proposed pipeline project. FERC requires that certificate applications for review and approval of new pipeline projects include "Resource Reports" containing environmental information. PGT has provided these reports to FERC in its certificate application for its "1995 Construction Program" and to BPA for use in the preparation of this EIS. The PGT 1995 Construction Program proposes 169 km (105 miles) of new 30-cm (12-inch) pipeline in Oregon (Coyote Springs Extension and the Medford Extension). The FERC will prepare an environmental assessment on PGT's "1995 Construction Program" as part of its compliance with NEPA. Portions of PGT's application to FERC pertaining to the Coyote Springs lateral have been summarized in Section 5.1.3 and on Table 5-10 of this FEIS.

2.2 Purposes For Action

Making a decision to provide wheeling services to PGE for the power produced at the proposed Coyote Springs Plant must accomplish the following purposes:

- Meet Federal, State, and local environmental requirements;
- Balance environmental impacts with economic costs;
- Assure consistency with BPA's statutory responsibilities; and
- Provide electrical system reliability that meets BPA's reliability criteria.

2.3 Other Proposed Energy Resources in the Area

Two cogeneration projects are proposed near Hermiston, Oregon, 40 km (25 miles) east of Boardman.

U.S. Generating Company's Hermiston Generation Project - U.S. Generating Company proposes to build a combined-cycle cogeneration power plant with two combustion turbines fueled by natural gas. Expected output of the plant is 474 MW under annual average conditions at the site, assuming full ***load***. U.S. Generating Company plans to connect the plant to BPA's existing transmission grid at McNary Substation.

Energy produced at the plant would be acquired by PacifiCorp for its customers in the Northwest. PacifiCorp requested transmission wheeling services from BPA in August 1993. BPA studies show that existing BPA transmission lines have enough capacity to wheel the output of the proposed plant under most operating conditions. BPA issued a DEIS on the Hermiston Generating Project in March 1994. A 45-day period was provided for comments on the DEIS. A public meeting was held in Hermiston on April 26, 1994. A FEIS for the project is currently being prepared. The FEIS is scheduled for completion in July 1994. A ROD is scheduled for August 1994.

Hermiston Power Project - J. R. Simplot Company, IDA-West Energy, and Trans Canada Pipelines Limited are proposing to build a 430 aMW combined-cycle CT cogeneration plant also near Hermiston, Oregon. The Hermiston Power Project was proposed in response to BPA's Resource Contingency Program. In this program, BPA solicited proposals for projects that BPA could option and purchase power from when needed.

Project sponsors were asked to propose projects that met certain requirements. Proposals were ranked and sponsors with potential projects to meet BPA's needs were selected to begin negotiations.

The Hermiston Power Project was selected for negotiations in BPA's Resource Contingency Program process. A DEIS on BPA's Contingency Resource Acquisition Program is scheduled for release in October 1994. A FEIS and ROD is scheduled to be issued in spring 1995.

To Chapter 3

3. Proposed Action and Alternatives

A number of actions, each an integral part of an overall action collectively called the Coyote Springs Cogeneration Project, are described below. More extensive descriptions for actions that have environmental consequences are provided later in this section.

3.1 Proposed Action

The BPA/PGE Transmission Agreement Would be Revised - BPA proposes to revise its general transmission agreement with PGE to establish Coyote Springs Plant as a point of interconnection for wheeling services. BPA and PGE currently have a transmission agreement through which PGE's power is delivered over BPA transmission lines. If BPA decides to wheel power from the plant, this agreement would be revised and authorized. The revised agreement would cover wheeling for power from the first combustion turbine at the plant. The timing of the second combustion turbine is uncertain. If PGE decides to complete the second combustion turbine, BPA will evaluate the transmission system, and provided sufficient capacity exists, modify the transmission agreement again. If BPA determines that it does not have sufficient transmission capacity to integrate the second unit, a range of options would be considered. Solutions would range from providing non-firm service (no new facilities), to building new transmission or substation facilities. Supplemental environmental analysis would be undertaken if new facilities are proposed.

BPA's Transmission System Would be Modified - BPA proposes to modify its transmission system to connect Phase I of the new Coyote Springs Cogeneration Plant to BPA's main transmission grid. A transmission line tap and loop line is proposed to connect the plant with BPA's McNary-Slatt 500-kV transmission line. Microwave communication facilities to connect the plant with the existing network that operates BPA's transmission system would be installed at the plant and other remote sites.

PGE Would Build a 440 aMW Cogeneration Plant - PGE proposes to build a 440 aMW cogeneration plant on a site within the Port of Morrow (Port) Industrial Park near the City of Boardman, Oregon. The project would be built in phases. The first combustion turbine (220 aMW) would be built as quickly as possible. Timing for the second combustion turbine is uncertain. Associated facilities that would be installed at the plant site include an electrical substation, water storage tanks, cooling towers, workshop, warehouse and administrative offices.

PGE Would Design and Build a 500-kV Loop Line - PGE also proposes to build a ***double-circuit*** 500-kV transmission ***loop*** line from the ***tap*** point on BPA's transmission line to the Coyote Springs Plant, a distance of about 2.4 km (1.5 miles). Map 1 provides an overview of

(Map 2 missing)

the area and BPA's existing transmission line route. Map 2, an aerial photograph of the Coyote Springs Project area, shows the proposed locations for these facilities. Upon energization of the Coyote Springs Plant, ownership of the transmission loop line would be transferred to BPA. BPA would then own, operate and maintain the transmission line.

PGT Would Build a Gas Line to the Plant - PGT proposes to construct a 29.8-km (18.5-mile), 30-cm (12-inch) pipeline from PGT's main transmission line which runs from near the Canadian/Idaho border to Malin, Oregon. The proposed route for the gas pipeline is shown on Map 1. The purpose of the Coyote Springs Extension is to enable PGT to transport 41 billion ***British thermal units (BTUs)*** per day of natural gas to the proposed Coyote Springs Cogeneration Plant.

BPA Would Charge PGE for Transmission Wheeling Services - If the proposal is completed, power would flow from the Coyote Springs Plant into the BPA system and west to one or more points of delivery in PGE's service area. PGE would pay BPA for wheeling power from the Coyote Springs Plant to its load. If PGE pays for any portion of the cost of the new BPA-owned transmission facilities, BPA would reflect this contribution in the rate development process. Any cost associated with these facilities that is not paid by PGE would be recovered in the rates from all transmission system network users.

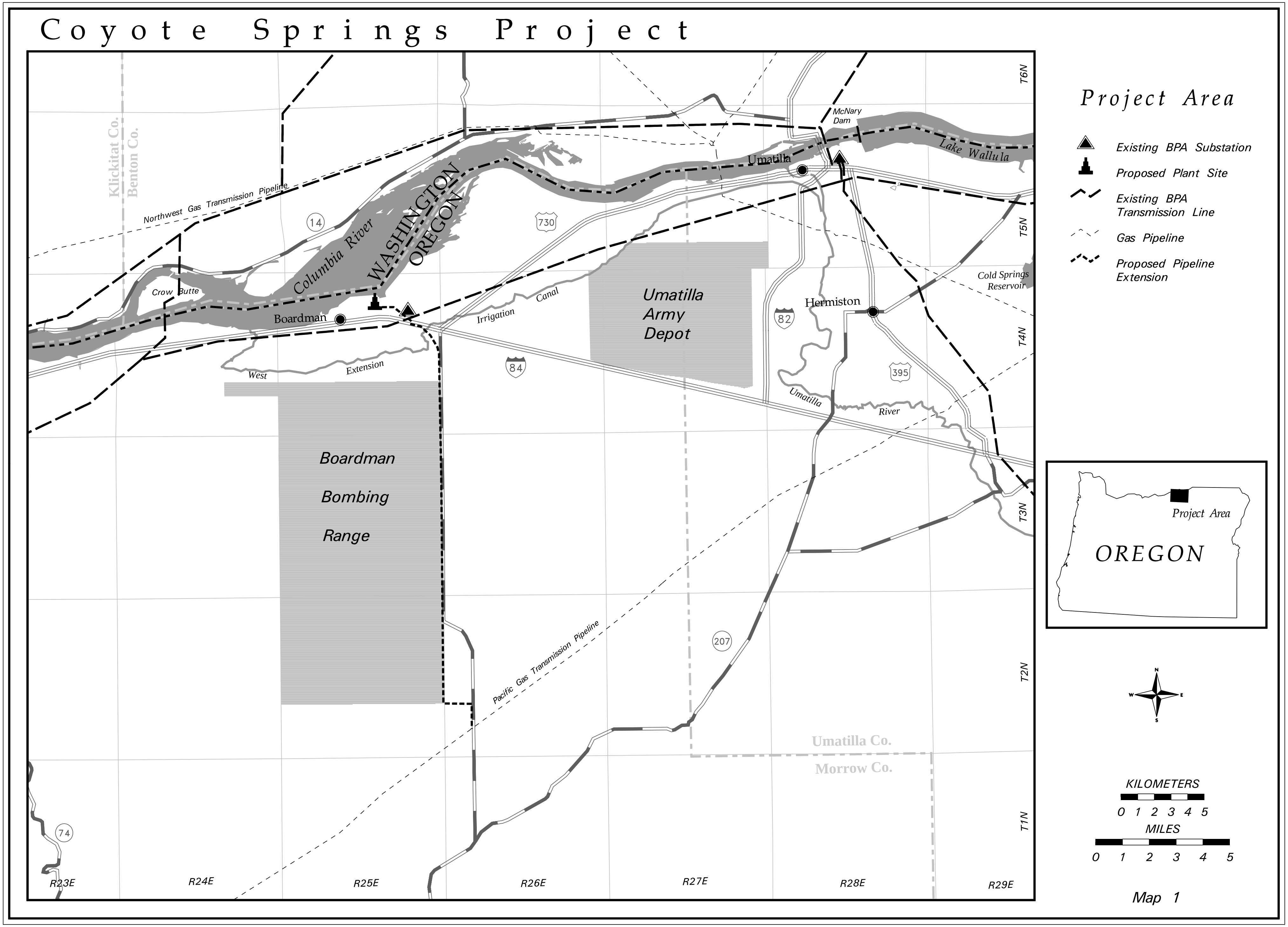
3.1.1 How the Proposed Action was Defined

The Coyote Springs Cogeneration Project was conceived in 1990 by Power Link, a subsidiary of PGE. In 1991, PGE offered output from the project to BPA under the Competitive Resource Acquisition Pilot Program in response to BPA's Request for Proposals for 300 aMW of ***firm energy***. BPA received resource proposals totalling 5,209 aMW of generation and 116 aMW of conservation. BPA did not select PGE's proposal.

In the period from November 1991 through August 1992, PGE conducted an extensive public process to develop their 1992 Integrated Resource Plan. Environmental considerations were an important consideration in development of the plan. Environmental organizations and individuals participated in an advisory group, a public policy group and in a wide range of public involvement caucuses and focus groups. In a summary of the 1992 Integrated Resource Plan, PGE lists four principles that underlie the plan: energy efficiency, cost-effectiveness, flexibility and environmental stewardship. A summary of alternate energy resources included in PGE's preferred resource strategy is provided in Section 2.1.

BPA has decided to limit its examination of overall alternatives to the proposed action and the no action alternative as it considers other resources "unreasonable" as defined in CEQ's NEPA Regulations. BPA's letter to the Environmental Protection Agency (see Chapter 9) provides added information on this topic. (See PGE's 1992 Integrated Resource Plan for additional information on PGE resource alternatives.)

Map 1. Project Area.



In early 1993, with their 1992 Integrated Resource Plan complete, PGE decided to proceed independently with the Coyote Springs Cogeneration Project to partially replace energy formerly provided by Trojan. An existing BPA transmission line corridor passes near the proposed plant site. PGE has requested transmission wheeling services from BPA to deliver energy from Phase I of the proposed project to the Portland, Oregon metropolitan area. BPA electrical system planners evaluated the transmission system and determined there was surplus capacity under most operating conditions to provide wheeling services for generation from the first of the two turbines proposed.

Because BPA will not acquire energy from the project, this EIS does not consider other generation resources, load shaping, fuel switching or conservation.

3.1.2 Location of the Proposed Project

The proposed project will be east of the City of Boardman, Oregon in the northern half of Section 10, Township 4 North, Range 25 East of the Willamette Meridian in Morrow County, Oregon. The plant would be within the Port of Morrow Industrial Park, about 190 m (625 ft.) south of the Columbia River.

The cogeneration plant will be on an approximately 9-ha (22-acre) site within the Port of Morrow Industrial Park. The site is bordered on the west by Ullman Boulevard, on the north by the Union Pacific Railroad, on the east by a Port water storage pond and on the south by a gravel road owned and maintained by the Port.

The proposed double-circuit 500-kV transmission loop line would exit the plant substation and run east about 91 m (300 ft.) north and parallel to Umatilla Electric Cooperative's transmission lines, to an angle point within an existing concrete batch plant site. From this point the loop line would travel in a southeasterly direction to BPA's existing transmission corridor. The new transmission loop line interconnects with BPA's McNary-Slatt 500-kV transmission line immediately north of Interstate Highway 84 (I-84), just before the transmission corridor crosses the highway.

PGT's proposed pipeline route follows part of the eastern border of the Boardman Bombing Range (see Map 1). The pipeline crosses I-84 near the transmission line tap and generally follows the transmission loop line route to the Coyote Springs Plant.

3.1.3 The Coyote Springs Cogeneration Project

A detailed description of the Coyote Springs Cogeneration Project was provided by PGE in Exhibit B of PGE's *Application for Site Certificate*, submitted to Oregon's EFSC on September 16, 1993. PGE's application was modified on January 6, 1994. A summary of the project as described in PGE's application is provided in this section.

Primary Plant Components

Descriptions of plant components as shown on the Coyote Springs Project Plot Plan, Figure 3-1, are provided below. Design specifications for the components are summarized in Table 3-1.

Heat Recovery Steam Generator - The heat recovery steam generators' function is to combine the high pressure and intermediate pressure steam produced by the combustion process to generate additional electric power. One heat recovery steam generator will be provided for each gas turbine generator installed at the plant.

Combustion Turbine Generator - Two General Electric "Frame 7FA" gas turbine generators will be used. Each gas turbine generator will be installed with all auxiliary equipment, including the gas turbine itself, inlet filters, silencer compartment, hydrogen-cooled electrical generator, lube oil coolers, water injection skid, compressor water wash skid, acoustical enclosure, and complete control system.

Steam Turbine Generator - Two steam turbine generators will convert the waste heat recovered in the heat recovery steam generator into electricity. ***Superheated*** process steam will be extracted from each steam turbine generator for process needs. The process steam will be cooled as necessary to provide saturated steam to the industrial user.

Cooling Tower - A multi-cell cooling tower will reject steam cycle heat (by evaporation) from passing through the main condensers and provide cooling water for miscellaneous equipment coolers. The tower will be 18 m (60 ft.) wide, 91 m (300 ft.) long and 12 m (40 ft.) high.

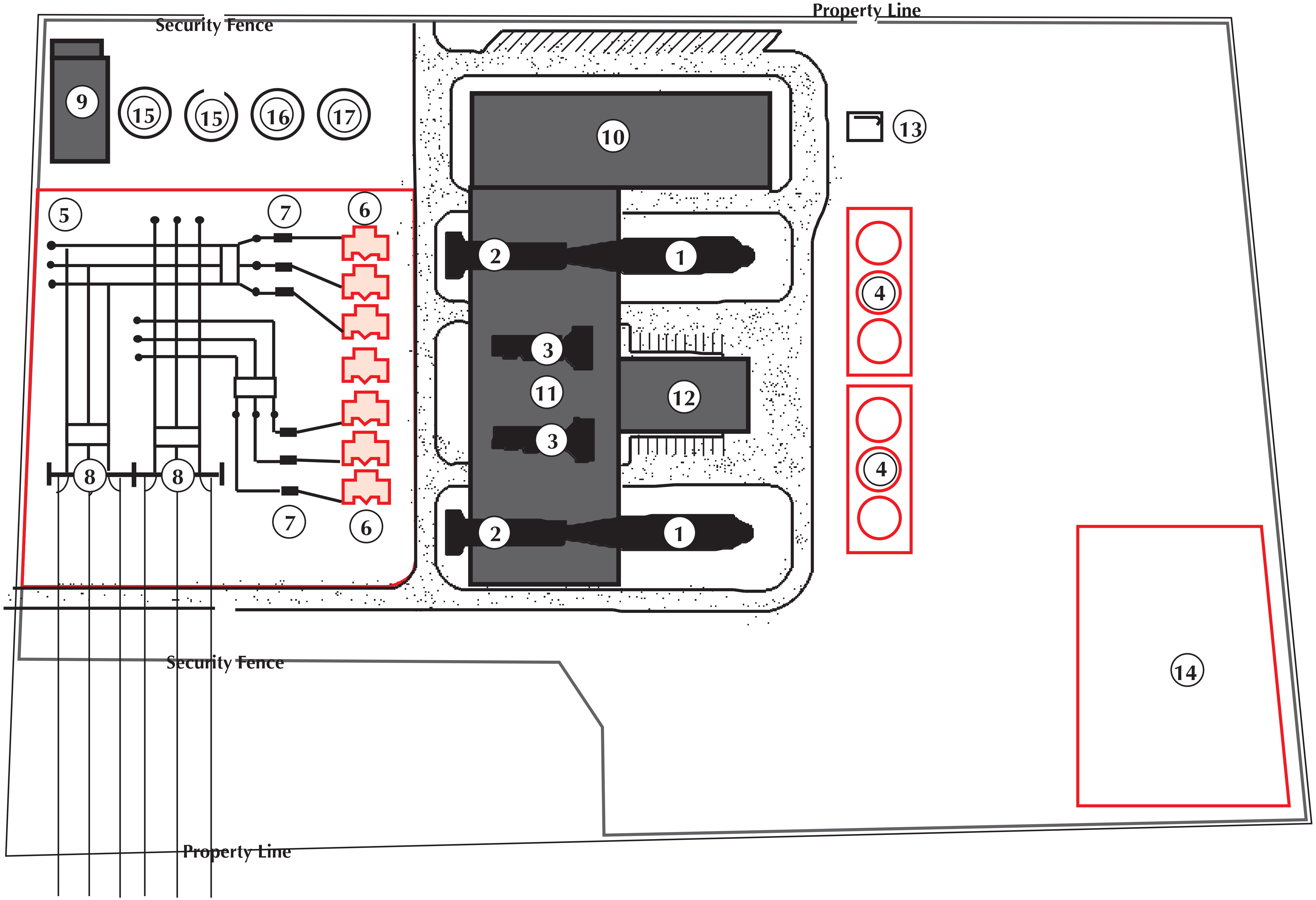
Plant Substation - A PGE substation will be built at the plant site. Substation equipment is described later on pages 3-6 and 3-9.

Auxiliary Transformers - Power for internal plant operation will be obtained through three auxiliary ***transformers***. Each of the two auxiliary transformers have the capability of supplying the station internal load under normal operating conditions. The third auxiliary transformer will have the capability of supplying power to the facility under shutdown conditions, and will provide power from a separate utility, Umatilla Electric Cooperative.

Gas Metering Building - The Gas Metering Building will register how much natural gas is used to fuel the plant. The peak fuel use for the proposed facility is expected to be 1,800 million BTUs per hour for each steam turbine or 18,000 ***therms*** (1 therm = 100,000 BTUs or 95 cubic ft. of gas).

Auxiliary Equipment Building - The Auxiliary Equipment Building will house water treatment equipment, auxiliary boilers, and associated system equipment. Two auxiliary boilers will provide backup to the facility to allow uninterrupted steam to the industrial park.

Figure 3-1. Coyote Springs Cogeneration Plant Plot Plan



Legend

1. Heat Recovery Steam Generator
2. Combustion Turbine Generator
3. Steam Turbine Generator
4. Cooling Tower
5. Plant Substation
6. Transformers
7. Power Circuit Breaker
8. Substation Dead End Structure
9. Gas Metering Building
10. Auxiliary Equipment Building
11. Main Turbine Building
12. Administration/Conrol Building
13. Ammonia Storage Tanks
14. Storm Water Detention Basin
15. Demineralized Water Tank
16. Condensate Storage Tank
17. Fire Water Storage Tank

North

Not to Scale

Source: Ebasco Services Incorporated

Main Turbine Building - The Main Turbine Building will house the two gas turbine generators, the two steam turbine generators, and the turbine auxiliary system equipment. The building will be approximately 24 m (80 ft.) high and contain approximately 4460 sq. m (48,000 sq. ft.).

Administrative/Control Building - The Administrative/Control Building will house the plant control room, administrative offices, electrical room, maintenance shop and warehouse functions. The two-story building will be approximately 930 sq. m (10,000 sq. ft.).

Ammonia Storage Tanks - Two storage tanks will store 64 m^3 (17,000 gal.) of ammonia at the facility. This amount of ammonia would provide about 40 days of continuous plant operation. The facility will use about 1.9 m^3 (510 gal.) of ammonia per day.

Stormwater Detention Basin - A stormwater detention basin will be constructed in the northeastern corner of the site. Stormwater from building roof drains and outdoor plant areas will be discharged to the Port's process water agricultural recycling system after first passing through the stormwater retention basin. The basin will have a surface area of about 1860 sq. m (20,000 sq. ft.) and will have an impervious liner to prevent leaching into the ***groundwater***.

Demineralized Water Tank - Demineralized water will be used at the facility for makeup to the steam cycle. Two 1500 m^3 (400,000 gal.) demineralized water tanks will be on-site.

Condensate Storage Tank - Condensate produced from steam will be stored in a single 1700 m^3 (450,000 gal.) storage tank on the site. Approximately 50 percent of the process steam export is expected to be returned as condensate to the facility for reuse in the steam cycle.

Fire Protection Water Storage Tank - The proposed fire water system is a pumped system. Its primary source is the Port's 7600 m^3 (2 million gal.) fresh water storage tank, about 400 m (1/4 mile) south of the proposed site. The Port's fire water system can be interconnected with the City of Boardman's domestic and fire water system, which has as its source the water tower in the City of Boardman, about 3.2 km (2 miles) away.

Coyote Springs Substation

A substation contains several different kinds of equipment arranged to carry out electrical functions, to minimize safety risk, and to accommodate operation and maintenance. The discussion below describes the equipment that would be installed at Coyote Springs Substation. Figure 3-1 shows the location of the equipment.

Power Circuit Breakers - Breakers automatically interrupt power flow on a transmission line at the time of a fault. Several kinds of breakers have been used in substations. The breakers planned for the proposed substation, called gas breakers, are insulated by special nonconducting gas (sulfur hexafluoride). Small amounts of hydraulic fluids are used to open and

Table 3-1. Major Project Components.

Plant Components	Quantity	Size/Dimensions	Other Characteristics
Combustion Turbine Generator	2	Output: 184.4 MW each	Fuel: Natural Gas. Air Emission Controls=Dry-low NOx technology.
Heat Recovery Steam Generator	2	64 m (210 ft.) exhaust stack	Ammonia injection system and selective catalytic reduction systems to reduce NOx emissions.
Steam Turbine Generator	2	Output: 79.3 MW each	Fuel: Natural Gas. Also produces steam for industrial users.
Auxiliary Boilers	2	136,078 kg (300,000 lb.) of steam/hour 55 m (180 ft.) exhaust stack	Fuel: Natural Gas. Produces steam when plant is shut down.
Cooling Tower	2	L= 91 m (300 ft.) W=18 m (60 ft.) H= 12 m (40 ft.)	Mechanical draft towers, two-speed fans force air through the towers, high-efficiency drift eliminators provided, blowdown system to remove buildup of dissolved solids. Uses 8,824 L (2,331 gal.) of water/minute. Blowdown 9,543 L (666 gal.) per minute.
Auxiliary Equipment Building	1	2230 sq. m (24,000 sq. ft.). Height:14 m (45 ft.)	Will house the water treatment and auxiliary boilers.
Main Turbine Building	1	4460 sq. m (48,000 sq. ft.). Height: 24 m (80 ft.)	Will house the combustion turbines and steam turbine generators.
Administrative Control Building	1	Two story building. 465 sq. m (5000 sq. ft.) each story. Height: 9 m (30 ft.)	Will house the control room, administration offices, electrical room, maintenance shop and a small warehouse.
Ammonia Storage Tanks	2	45.4 kL (12,000 gal.) each.	Delivered by truck to the site. Used in NOx emission control system.
Demineralized Water Tanks	2	1514 kL (400,000 gal.) Height: 8.5 m (28 ft.)	Metal tank on concrete foundation. Storage of demineralized water for use in the steam cycle.
Condensate Storage Tank	1	1703 kL (450,000 gal.) Height: 9.1 m (30 ft.)	Metal tank on concrete foundation. Storage of water condensed and returned from steam users.
Fire (Raw) Water Storage Tank	1	1136 kL (300,000 gal.) Height: 6 m (20 ft.)	Metal tank on concrete foundation. On-site storage of well water.
Transmission Components			
Plant Substation and Control House	1	Fenced yard = 195 m x 107 m (640 ft. x 350 ft.)	Outdoor, gravel surfaced, security fenced yard. Termination site for loop line. Step up transformers, power circuit breakers and sectionalizing switches located in the plant substation. The substation control house will house microwave radios, control devices, and metering equipment.
500-kV Single-Phase Step-up Transformers	7	L=12 m (40 ft.) W= 10 m (30 ft.) H=10 m (30 ft.)	The step-up transformers will boost the voltage from that of the generators to 500-kV. Each transformer contains 45,425 liters (12,000 gal. of cooling oil).
500-kV Circuit Breakers	1 initially	L= 12 m (40 ft.) W= 1.5 m (5 ft.) H= 7 m (23 ft.)	Gas insulated circuit breakers automatically interrupt the flow of electrical current. Circuit breakers are necessary to switch transmission lines open or closed for maintenance or outage conditions.
Substation Deadend Towers	2	L= 7.6 m (25 ft.) W= 24.4 m (80 ft.) H= 34.7 m (114 ft.)	Towers within the confines of the substation where incoming and outgoing transmission lines end.
Microwave Tower and Antenna	1	H= 38 m (125 ft.)	Steel structure to elevate microwave antenna to provide line of sight path to BPA's McNary Microwave Station.
500-kV Double-Circuit Transmission Loop Line	1	L=1.6 km (1-mile)	Interconnects with BPA's McNary-Slatt 500-kV line and delivers power from the plant to BPA's transmission system.
Transmission Line Towers	7	H=52 m (170 ft.)	Each transmission tower will carry two circuits (one on each side of the tower). Overhead ground wires will be attached to the top of the tower for lightning protection.
Tap Structure(s)	1	H=52 m (170 ft.)	Will look similar to the loop line towers.
Transmission Line Right-of-way	Easement	W= 45.7 m (150 ft.)	PGE will acquire the right-of-way and deed it to BPA upon completion of the line.
Clearing/Disturbance		930 sq. m (10,000 sq. ft.) at tower sites.	Only tower sites would be cleared of vegetation.

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close the electrical contacts within gas insulated breakers. The hydraulic fluid is the only toxic or hazardous material that will be used.

Transformers - Transformers change voltage. Electricity from the steam turbine generator and the gas turbine generators will be transformed to 500-kV for delivery over BPA's transmission system. Three single phase transformers will be needed for each combustion turbine. An additional single phase unit will serve as a spare transformer. The transformers each contain 45 m^3 (12,000 gal.) of cooling oil. An oil containment liner would be installed to collect and retain oil within the substation should an oil spill occur. Only newly purchased electrical equipment certified as polychlorinated biphenyl (PCB)-free would be installed.

Switches - Switches are devices used to mechanically disconnect or isolate equipment. Switches are normally on both sides of circuit breakers.

Bus Tubing, Bus Pedestals - Power moves within a substation and between breakers and other equipment on ridged aluminum pipes called bus tubing. Bus tubing is elevated by supports called bus pedestals. Buswork within the plant substation would transport the entire plant's power output to an overhead 500-kV line. This transmission line will tap into the existing McNary-Slatt 500-kV transmission line, at a point about 2.4 km (1.5 miles) southeast of the proposed site.

Substation Dead Ends - Dead ends are towers within the confines of the substation where incoming and outgoing transmission lines end. Dead ends are typically the tallest structures in a substation.

Substation Fence - This chain-link fence with razor wire bayonets on top provides security and safety. Space to maneuver construction and maintenance vehicles is provided between the fence and electrical equipment.

Substation Rock Surfacing - An 8-cm (3-inch) layer of rock selected for its insulating properties is placed on the ground within the substation to protect operation and maintenance personnel from electrical danger in the event of substation electrical failures.

Control House - Electric/electronic controls and monitoring equipment for the power system are housed in a building within the substation. Control houses are heated and air conditioned to provide a controlled environment for equipment.

Communication Facilities - BPA has an existing microwave communication network that delivers signals to operate substation equipment from control centers and other remote locations, and to report revenue metering. This network also provides voice communication from dispatchers to substation operators and maintenance personnel. Microwave communications require an unobstructed “line of sight” between antennas. A tower 38 m (125 ft.) high would be constructed at the substation for an antenna aimed toward BPA’s existing Roosevelt radio station. New communication equipment will be provided at McNary and Coyote Spring substations as well as within remote radio stations in the communication network.

Cogeneration Process and Output

The proposed plant would burn natural gas and produce electrical energy and useful heat captured as steam. Steam from the facility could be used by food processors within the Port of Morrow Industrial Park. Lamb Weston and Oregon Potato currently process potatoes using steam from in-house gas-fired boilers. PGE anticipates that when the Coyote Springs Plant becomes operational, existing boilers at the potato processors will be shut down. However, the owners of the processing plants may retain the boilers as backup units. Each unit of the Coyote Springs Plant will be able to produce up to 113 tonnes (124 tons) of steam per hour.

Water and Sewer Systems

Water Supply - Water requirements of the proposed plant will be supplied by four existing Port of Morrow wells (Carlson Sumps 1 and 2, and Port Well #3 and Port Well #4). If additional water is needed, the Port has reached an agreement with the City of Boardman for the City to supply up to an additional 7.6 m^3 (2,000 gal.) per minute (PGE, 1993). Information on status and water source of each well is provided in Table 3-2 below.

Table 3-2
Project Water Sources

Primary Water Sources				
Well Name	**Status**	**Permitted Use**	**Permitted Rate**	**Source Aquifer**
Carlson Sump #1 & 2	Existing	Municipal	3.8 cubic meters (1013 gpm)	Alluvial
Port Well #3	Existing	Municipal	3.4 cubic meters (897 gpm)	Alluvial
Port Well #4	Existing	Municipal	2.9 cubic meters (758 gpm)	Basalt
			total: 10.1cubic meters (2668 gpm)	
Backup Water Source				
Well Name	**Status**	**Permitted Use**	**Permitted Rate**	**Source Aquifer**
City of Boardman Ranney Collector	Existing	Municipal	22.8 cubic meters (6030* gpm)	Alluvial
* 2,000 gpm commitment to Coyote Springs Cogeneration Plant				

The maximum amount of water that would be required for the operation of the facility will vary depending on several factors: (1) level of plant operation; (2) cooling tower efficiency; and (3) amount of steam supplied to customers. The maximum amount of water that is required for operation of the facility is 16.5 m^3 (4,350 gal.) per minute. Actual operation of the proposed plant, however, is expected to require considerably less water. On an annual average basis, the proposed project is expected to require approximately 9.5 m^3 (2,500 gal.) per minute (PGE, 1994). Figure 3-2 illustrates how the average annual water flow would be used during operation of the plant. Figure 3-2 reveals that of the anticipated 9.5 m^3 (2,500 gal.) per minute used, 6.3 m^3 (1,660 gal.) per minute will be evaporated into the atmosphere and 2.6 m^3 (690 gal.) per minute will be discharged into the Port of Morrow's industrial wastewater system. Although not shown, 22.7 L (6 gal.) per minute will be routed into the Port's sanitary sewer system, and will then flow into the City of Boardman's sewage treatment facility.

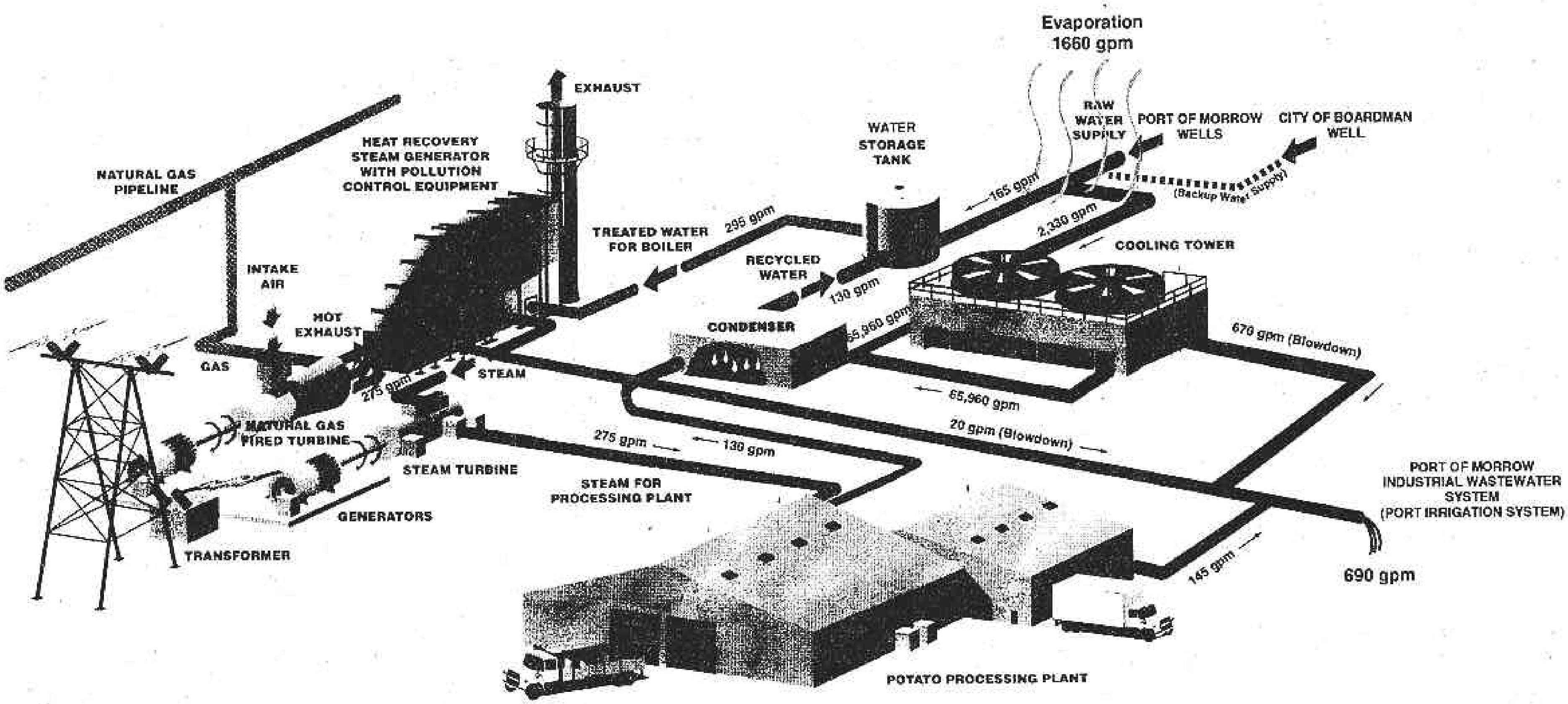
Of the 6.3 m^3 (1,660 gal.) per minute evaporated into the atmosphere from the proposed plant, approximately 4 L (1 gal.) per minute will fall back to the earth as drift. Drift is considered that part of the condensate that condenses on a surface, be it a blade of grass, the exterior of a building or an asphalt roadway.

Well Water Use - Under normal conditions Carlson Sumps 1 and 2 and Port Well #3, which draw water from the shallow ***aquifer*** wells, will provide most of the water needed for operation of the Coyote Springs Plant. These wells will provide makeup water to the cooling water basin and the condenser water system because pure water is not needed. Well water from the ***alluvial*** aquifer will also be used for miscellaneous nonpotable uses such as equipment maintenance and washdown, and fire suppression.

Demineralized Water - Water from Port Well #4 will supply the demineralized water system and potable water uses at the plant. The demineralized water system removes minerals within the raw water, then it is stored in two large tanks. Demineralized water will then be pumped from storage tanks to various services within the plant. A primary use of demineralized water is the replacement of water used in the steam cycle.

Wastewater Disposal - PGE's proposal is to discharge its wastewater to the Port of Morrow industrial wastewater system. The Port of Morrow currently dilutes industrial wastewater from the food processing plants located on Port property with well water and irrigates agricultural feed crops with the dilute mixture. About 2.6 m^3 (690 gal.) per minute of ***wastewater*** will be produced by the Coyote Springs Plant. Wastewater will be from these sources: (1) neutralized demineralized backwash water; (2) neutralized condensate polisher backwash water, and/or (3) cooling tower ***blowdown***.

Coyote Springs Cogeneration Site Water Balance (Annual Average Flow)



Source: PGE, 1993

Figure 3-2

Plant Operation and Air Pollution Control Equipment

The combustion turbines are each expected to operate an average of 7,760 hours per year, but have the capacity to operate up to 8,760 hours per year. Auxiliary boilers are expected to operate for six weeks each spring while the turbines are shut down for maintenance (during the Columbia River fish flush operation). Auxiliary boiler operation is expected to total 2,000 hours but could be as high as 8,760 hours if a major turbine failure occurs.

The proposed facility will use best available control technology (***BACT***) to minimize pollutants emitted in significant quantities. Specific controls proposed for use at the Coyote Springs Plant are discussed below.

Oxides of Nitrogen (NO_x) - ***NO_x*** are formed by two different mechanisms during fossil fuel combustion: when nitrogen normally present in the atmosphere combines with free oxygen in the presence of heat (nitrogen fixation); and when nitrogen in the fuel stock is oxidized during combustion. Natural gas contains insignificant amounts of nitrogen, so most NO_x emitted will be from free nitrogen fixation. The majority of NO_x emitted from combustion processes is nitrous oxide (NO); the rate of conversion to nitrogen dioxide (***NO_2***) depends on the oxidizing potential of the atmosphere.

NO_x emissions will be controlled both in the turbine exhaust and in the stack. NO_x emissions from the turbines will be minimized by combining natural gas with air before combustion, thereby inhibiting a discrete flame front and reducing flame temperature. This technique is called dry low NO_x technology. Dry low NO_x technology will bring the NO_x emissions down to 25 parts per million (***ppm***). The NO_x remaining in the flue gas will be reduced to nitrogen (N_2) and water by ammonia injection at the heat recovery steam generating units through a process called selective catalytic reduction. Selective catalytic reduction can be operated at varying degrees of NO_x destruction. The more NO_x removed, the more ammonia released to the atmosphere (ammonia slippage). Eighty-two percent of the NO_x will be removed. This results in an ammonia slippage of between 10-20 ppm. A 10 ppm ammonia slip corresponds to 11.2 kg (24.4 pounds)/hour from each turbine or 177 kg (390 pounds)/8 hours. Operating at this level will bring NO_x emissions down to 4.5 ppm.

NO_x emissions from the auxiliary boilers will be controlled through the use of low NO_x burners and flue gas recirculation. Low NO_x burners have multiple combustion zones that either suppress the excess air in the primary combustion zone or control flame temperature. Flue gas recirculation reduces both the peak flame temperature and the oxygen concentration in the combustion air; both reduce NO_x formation. Together these two control technologies will reduce NO_x emissions to 40 ppm.

Carbon Monoxide (CO) - ***CO*** emissions from the turbines and from the auxiliary boilers will be minimized by the use of good combustion controls. These controls will reduce CO emissions to 15 ppm.

Sulfur Dioxide (SO_2) - The sulfur concentration in natural gas is very low (0.03-0.19 ***grains*** per 2.8 m^3 (100 cubic ft.). (California Energy Commission, 1992 and PGE, 1993). Therefore, ***SO_2*** emissions from natural gas combustion will be negligible and are limited by the facility's air contaminant discharge permit and by the sulfur content of natural gas. Good combustion controls reduce the amount of fuel required and thus limit SO_2 emissions.

Carbon Dioxide (CO_2) - The proposed facility will use the following controls to minimize CO_2 emissions: maximize efficiency, use natural gas rather than a fuel with higher carbon content, and provide steam to local food processors.

Particulate Matter - Particulate matter is generated by several mechanisms: (1) incomplete combustion; (2) nitrate (NO_3-) and sulfate (SO_3-) formation from SO_2 and NO_x; and (3) by the formation of ammonia salts during selective catalytic reduction of NO_x. Most ***particulates*** emitted from the facility will be generated from the selective catalytic reduction process. Particulate emissions from the turbines and from the auxiliary boilers will be controlled by using clean fuel (natural gas) and good combustion controls. Traditional particulate control technologies such as bag houses and scrubbers cause air pressure to drop too much for turbine operation. Projected emissions from the facility are expected to amount to 71 tonnes/year (78 tons/year).

Air Toxics - Air toxics come from impurities in the fuel, injection water, intake air and from incomplete combustion. To discourage air toxic emissions, demineralized injection water and prefiltered intake air will be used. In addition, the facility will burn natural gas (a low ash fuel), which will encourage complete combustion. Good combustion controls will also be used to limit air toxic emissions.

Continuous Emission Monitoring - In addition to the pollution controls mentioned above, the two heat recovery steam generating unit stacks will each be equipped with continuous emission monitoring systems. These systems will record NO_x, CO and ***O_2*** levels in stack emissions and provide historical evidence that emissions meet permit requirements (PGE, 1993).

Solid Waste and Toxic or Hazardous Materials

Estimated quantities of solid waste material expected to be produced during plant operation are listed in Table 3-2. Some solid waste material is classified as ***hazardous*** and would need careful handling and disposal to protect public health and safety. Section 5 describes these materials and special handling plans for them.

The cogeneration plant would use and store several toxic substances. Table 3-3 lists the materials that will be used at the Coyote Springs Plant. These substances are discussed in Section 5.

Table 3-3
Coyote Springs Cogeneration Plant - Description of Solid Waste Materials

Waste Stream	Classification	Amount	Frequency	On-Site Treatment	Storage	Off-Site Treatment/ Disposal
Used Lead Acid Batteries	Hazardous	2-cells	Once Per Year	None	90-days	Recycle to Battery Vendors
Spent SCR Catalyst Material	Hazardous	255-345 cu. m (9,000-12,000 cu. ft.)	Once Every 3-5 Years	None	None	Ship to Hazardous Waste Disposal Facility
Oily Rags, Oil Absorbent Material	Hazardous	<1 cu. m (20 cu. ft.)	Once Per Month	None	90-days	Ship to Hazardous Waste Disposal Facility
Spent Cation Demineralizer Resins	Nonhazardous	48 cu. m (1,700 cu. ft.)	Once Every 8-10 Years	None	None	Recycle to Resin Vendors
Spent Anion Demineralizer Resins	Nonhazardous	45 cu. m (1,600 cu. ft.)	Once Every 4-5 Years	None	None	Recycle to Resin Vendors
Office Waste Materials (Trash and Garbage)	Nonhazardous	>9 kg/day (>20 lb./day)	Daily	None	None	Ship to Sanitary Landfill

Table 3-4
Coyote Springs Cogeneration Plant - Toxic Fluids, Chemicals and Gases

Material Type	Purpose	Use/Time (Approximate)	Storage Volume	Storage Method	Delivery Method
Fuels					
Natural Gas	Principal Fuel	41 billion BTU's/day	None	None	Pipeline
Chemicals					
Sulfuric Acid	Water Treatment	2 cubic meters/day (570 gal./day)	129 cubic meters (34,000 gallons)	Steel Tank	Truck
Sodium Hydroxide (Caustic Soda)	Water Treatment	1.9 cubic meters/day (67 gal./day)	38 cubic meters (10,000 gallons)	Steel Tank	Truck
Phosphate/pH Control Chemical	Boiler Water Treatment	0.05 cubic meters/day (12 gal./day)	30 cubic meters (8,000 gallons)	Steel Tank	Truck
Neutralizing Amine	Corrosion Control-Boilers	0.01 cubic meters/day (3 gal./day)	.75 cubic meters (200 gallons)	Tank	Truck
Oxygen Scavenger	Corrosion Control-Boilers	0.02 cubic meters/day (6 gal./day)	1.5 cubic meters (400 gallons)	Tank	Truck
Anhydrous Ammonia	Air Pollution Control	1.6 cubic meters/day (425 gal./day)	32 cubic meters x 2 (8,500 gallons x 2)	Pressurized Tanks	Truck
Sodium Hypochlorite Bleach	Cooling Water Treatment	0.2 cubic meters/day (45 gal./day)	11.4 cubic meters (3,000 gallons)	Tank	Truck
Corrosion/Scale Inhibitor	Cooling Water Treatment	0.4 cubic meters/day (115 gal./day)	26.5 cubic meters (7,000 gallons)	Tank	Truck
Gases					
Gaseous Hydrogen	Generator Coolant	22.7 cubic meters/day (800 cu ft./day)	7.4 cubic meters x 100 (260 cubic feet x 100)	Pressurized Bottles	Truck
Carbon Dioxide	Generator Purging	NA	NA	Steel Cylinders	Truck
Lubricants/Coolants					
Lubricating Oil	Turbine Lubrication	NA	208 liters (55-gallon Drums)	Metal Drums	Truck
Hydraulic Fluid	Equipment Operation	NA	208 liters (55-gallon Drums)	Metal Drums	Truck
Insulating Oil	Electrical Equipment	NA	208 liters (55-gallon Drums)	Metal Drums	Truck
Misc. Lubricants	Equipment Operation	NA	208 liters (55-gallon Drums)	Metal Drums	Truck
Cleaning / Degreasing Agents	Equipment Cleaning	NA	208 liters (55-gallon Drums)	Metal Drums	Truck

3.1.4 Transmission Integration Facilities

Proposed Electrical Plan - Plan 5

Power from the Coyote Springs Cogeneration Plant would be integrated into BPA's transmission grid by tapping the existing 500-kV transmission line between McNary Substation and Slatt Substation. A new double-circuit 500-kV loop line would be built from the tap point to the Coyote Springs Substation, located at the plant. Switches and power ***circuit breakers*** would be installed in the Coyote Springs Substation. Microwave communication facilities to accommodate system operation would also be installed.

Initially, only one circuit breaker would be installed at Coyote Springs. When the second phase generation units are built, additional protection facilities will be installed. The estimated cost of Plan 5 is $11 million (including transmission line costs).

Proposed facilities in Plan 5 are described in greater detail below. Information about substation and transmission facilities is also provided in Table 3-1.

Coyote Springs Substation

PGE proposes to design and build the Coyote Springs Substation at the southern edge of the plant site. The substation will be built in two stages corresponding to development of the two generators. BPA and PGE engineers will coordinate closely during substation design. Substation design will meet BPA standards. (See Section 3.1.3.)

Double-Circuit 500-kV Transmission Loop Line

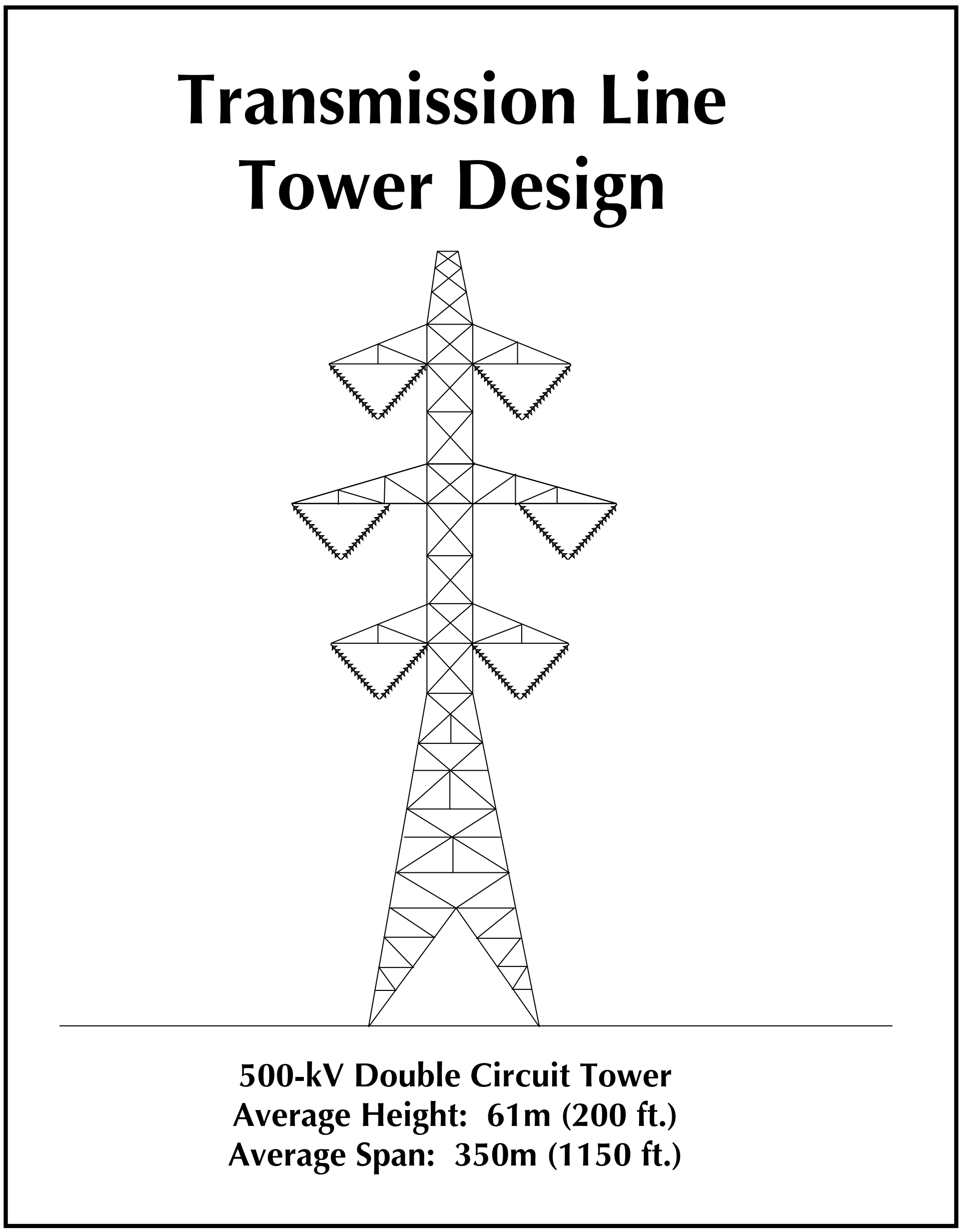
The double-circuit 500-kV transmission line will exit the plant substation and run east about 40 m (130 ft.), parallel to and north of Umatilla Electric Cooperative's existing 115-kV and 12.47-kV transmission lines to a point within an existing concrete batch plant. From this point the transmission line would turn and continue southeast to BPA's McNary-Slatt 500-kV transmission line. The double-circuit line would connect with the existing line at a point immediately north of I-84. The route of this line and tentative transmission ***tower*** sites are shown on Map 2.

Figure 3-3 illustrates a typical ***lattice steel*** 500-kV double-circuit transmission line tower. One line composed of three ***conductor*** groups, called phases, is on each side of the towers. Each phase will have three steel reinforced aluminum conductor cables. Overhead groundwires would be strung between the tops of the towers to reduce damage from lightning strikes.

Alternate Transmission Line Routes - The proposed Coyote Springs Cogeneration Plant site is very close to BPA's transmission line corridor. The tap site is located as close to the plant site as possible without requiring a crossing of I-84. Tower locations between the tap point and the plant site were selected to be accessible from existing access roads and to avoid existing wetlands.

An alternate alignment to minimize public exposure to electromagnetic fields was defined using electromagnetic field (**EMF**) calculations. This alignment passed east and north of the concrete plant building and workshop. However, it required building road access and several towers within a wetland area bordering Messner Pond. This alignment was dropped when it was discovered that the concrete plant and workshop would be relocated after the plant is built and when the aggregate quarry (next to the plant site) ceases operation.

Figure 3-3
Transmission Line Tower Design



BPA Transmission Line Tap

The existing 500-kV transmission line between BPA's McNary Substation and BPA's Slatt Substation would be interconnected with the new double-circuit loop line built by PGE. A dead-end tower would be built within the existing line to break the line into two segments. Each line segment would cross over two 230-kV lines and be attached to opposite sides of the new double-circuit line. The locations of the tap and tap line towers are shown on Map 2.

3.1.5 PGT Natural Gas Extension Pipeline

PGT proposes to construct a 29.8-km (18.5-mile), 30-cm (12-inch) pipeline from PGT's main transmission system (see Map 1). PGT has a contract with PGE to supply 41 billion BTUs of natural gas daily to the Coyote Springs Plant. The Coyote Springs Extension Pipeline is sized to carry about 100 billion BTU/day (enough for both units at Coyote Springs). The gas delivery pressure would be approximately 42 kg per square cm (600 pounds per square inch [psi]). No new compressor station would be installed on the extension.

Other pipeline facilities would include main line valves at each end of the extension and a meter station located at the cogeneration plant site. Because the proposed pipeline route would parallel existing roads for most of its distance and because of intersecting county roads, no new access roads are proposed. Local utilities would provide power to the meter station; no new supply lines would be needed. PGT proposes to rent up to 8 ha (20 acres) in the Port of Morrow Industrial Park for a temporary pipe off-loading and storage yard and a construction staging area to support the extension construction.

The permanent pipeline right-of-way would be a 11-m (35-ft.) wide easement, except where no easement is required with an existing road right-of-way. A temporary working strip, typically 9 m (30 ft.) wide, would be required during construction. The total area disturbed during construction (impact area) would be 20 m (65 ft.) wide, except on lands with special width requirements, such as canal and road/highway crossings. The permanent pipeline right-of-way would be maintained for the life of the project which is expected to exceed 30 years.

The proposed pipeline would designed and constructed in accordance with U.S. Department of Transportation Code of Federal Regulations (CFR) (49 CFR 192). Standard open cut pipeline construction methods would be used, except in several areas: where the proposed route would cross Wilson Road and I-84 to avoid traffic disruption, and where it would cross the West Extension Irrigation Canal to avoid facility damage and loss of irrigation water. Trenchless construction techniques (boring) would be used in these areas.

The pipeline would be placed in an excavated trench dug at a standard depth of 1.5 m (5 ft.) allowing for 30 cm (1 ft.) of padding material, the pipe, and 1 m (3 ft.) of cover. The standard excavation depth does not apply in the areas where trenching would not be used.

PGT used criteria for route selection that avoided adverse environmental impacts to the extent possible. In addition to the mitigation measures described in Section 5.1.3, PGT will construct the project implementing the following general mitigation measures:

- Notify and work with each property owner before construction to minimize conflicts with existing land uses. Before construction begins, landowners will be advised of fence openings and disturbances to range or farmlands, improvements, and other range or farmland use-related activities.

- Obtain all applicable permits, and work with local and state governments to avoid land use conflicts.

- Develop, monitor, and maintain an effective erosion control and restoration program.

- Develop and implement a Spill Prevention Control and Countermeasure Plan (SPCC) to minimize spills and ensure proper handling of all hazardous materials in compliance with state and Federal regulations.

- Implement an appropriate fire prevention and suppression program.

- Implement and maintain an environmental training program for all management, inspection, supervisory, and crew personnel.

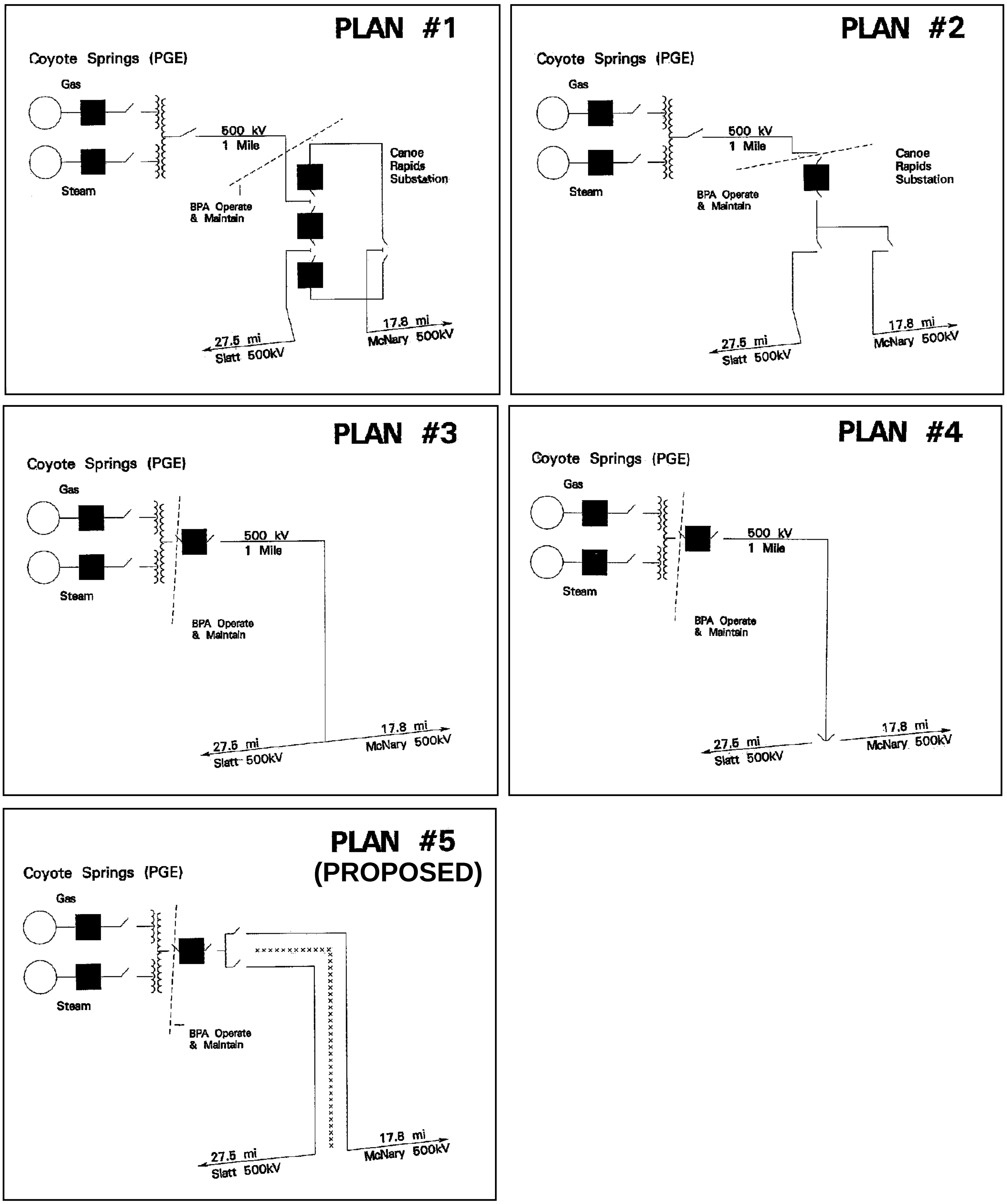
3.1.6 Electrical Plans Considered but Dropped

Five different electrical plans were considered for integrating power from Coyote Springs Plant into BPA's transmission grid (see Figure 3-4). Each plan included tapping BPA's McNary-Slatt 500-kV transmission line, and building a new 500-kV transmission line from the tap to the Coyote Springs Plant. The plans differ in degree of protection against transmission line-caused plant shut downs and initial cost. The proposed plan is Plan 5. Plans 1-4 each have undesirable aspects, such as costs or environmental concerns, which caused them to be dropped from consideration. These plans are described below.

Plan 1 - Facilities added include: (1) a 500-kV double-circuit tap to BPA's McNary-Slatt 500-kV line; (2) a new substation containing three 500-kV circuit breakers and communication facilities; (3) a single-circuit 500-kV transmission line from the substation to the Coyote Springs Plant Substation.

Plan 1 provides the greatest operational flexibility and maximum protection against transmission line outages that would cause the Coyote Springs Plant to shut down. Plan 1 would have the highest cost at $13.4 million excluding transmission line costs.

Figure 3-4
Electrical Plans Considered



Plan 2 - Plan 2 differs from Plan 1 in one respect; only one circuit breaker is provided at the substation. This plan does not protect against transmission-caused shut downs of the Coyote Springs Plant. Costs for Plan 2 are $9.7 million excluding transmission line costs.

Plan 3 - Plan 3 does not require a new substation. A tap to BPA's 500-kV McNary-Slatt line is required. A single-circuit 500-kV line would be built from the tap to the Coyote Springs Plant Substation. Existing circuit breakers at BPA's McNary and Slatt Substations, and a new 500-kV breaker at the Coyote Springs Substation would form what is called a three terminal line. These breakers de-energize the line if the line is disturbed by lightning strikes or other natural events, or during line maintenance.

This plan minimizes the cost of transmission facilities. Costs for Plan 3 are $5 million excluding transmission line costs; however, this plan does not protect against transmission-caused shut downs of the Coyote Springs Plant.

Plan 4 - Plan 4 is similar to Plan 3, but adds line sectionalizing switches at the tap point. The switches provide the ability to take a portion of the McNary-Slatt line out of service for maintenance and still allow the Coyote Springs Plant to operate. The plant and line would need to be de-energized before these switches could be operated, requiring a plant shut down. As in Plans 2 and 3, no protection is provided for transmission line disturbances that could cause the Coyote Springs Plant to shut down.

I-84 is close to the tap/switch site. Switch installations for 500-kV lines look similar to a substation and would be visible from I-84.

3.2 No Action Alternative

The No Action alternative would remove the potential impacts from the Coyote Springs Plant and related transmission facilities at the proposed site. PGE would not meet its need to find replacement power for the loss of its Trojan Nuclear Plant. Because PGE needs to find replacement power, PGE would build a similar plant at a different location or purchase power from independent power producers.

If the Coyote Springs Plant is not built, surplus capacity on BPA's transmission lines would likely be available for other power plants. Future upgrades of the transmission system to increase capacity through the area may be able to be deferred longer.

To Chapter 4

4. Affected Environment

This section describes the environment that would be affected by construction and operation of the proposed Coyote Springs Cogeneration Project and related facilities. The description provides the baseline for comparing the No Action alternative to the proposed action. Environmental consequences are discussed in Section 5.

4.1 Coyote Springs Cogeneration Plant and Transmission Loop Line

4.1.1 Land Use and Community Character

The area's land use has been influenced by several important characteristics: (1) geography, including latitude, elevation, and relative position with respect to the Cascade Mountain Range; (2) meteorology, including annual rainfall, seasonal and diurnal temperatures, relative humidity, length of the growing season and prevailing winds; (3) geology, including soils and availability of subterranean water; (4) location relative to major transportation routes, primarily the Columbia River and I-84, one of the principal east-west highway corridors in the western United States; (5) proximity to the City of Boardman and other population centers both within and outside the State of Oregon, including markets oversees; and (6) an available labor supply in Morrow and Umatilla counties.

The proposed project is outside the City of Boardman, but within the City's urban growth boundary (UGB) (see Map 3). Title to the 9-ha (22-acre) site for the proposed plant is held by the Port of Morrow. This site is a small portion of approximately 2800 ha (7,000 acres) under the Port's control in the area. The major portion of the Port's holdings is also shown on Map 3. Title to the proposed 2.4-km (1.5-mile) transmission line corridor is also held by the Port. The Port has agreed to lease the power plant site to PGE and issue PGE an easement for the 500-kV transmission line.

The proposed plant site is about 400 m (1/4 mile) east of the City of Boardman. The City of Boardman is about 70 km (45 miles) west of the City of Pendleton, approximately the same distance from the Tri-Cities area of southeastern Washington, and about 225 km (140 miles) east of the Portland metropolitan area. The Tri-Cities area is the nearest large population center to the City of Boardman. The combined population of the incorporated areas of Pasco, Kennewick and Richland is over 100,000 (Lowe, 1993). The City of Spokane in northeastern Washington, with a 1992 population of approximately 180,000, is about the same distance from the City of Boardman as is the City of Portland.

Existing Land Use

The current land use of the proposed power plant site is vacant. The area has been mined for aggregate, but the 9 ha (22 acre) site has not been mined for over a year (Neal, Port of Morrow General Manager, June 6, 1994). Mining by Ready Mix Limited has been an ongoing activity for 15 years (verbal information from the Port of Morrow). As the mining operation moved east, the western portion was filled in. This western portion is now the proposed site for the cogeneration project. Land uses adjacent to the proposed site include the Union Pacific Railroad on the north, Messner Pond and an irrigation pond on the east, a vacant parcel on the south, and Ullman Boulevard on the west. Land near the proposed plant site is also used for potato and onion processing plants, two mobile homes, potato storage barns, the City of Boardman's sewage lagoons, a quarry for mining ***riprap***, and BPA's Boardman Substation.

The proposed transmission line route would cross vacant land and land used for a public right-of-way (Columbia Avenue), a concrete batch plant that may soon close, a portion of the City of Boardman's sewage treatment facilities, and an irrigated agricultural field (see Map 4). Land in the area is also used for a number of Federal facilities such as the Boardman Bombing Range, the Umatilla Ordinance Depot, and the Umatilla National Wildlife Refuge (see Map 5).

Planning and Zoning

The proposed plant site is in the unincorporated area of Morrow County, but within the City of Boardman's UGB. Because the Port controls a significant amount of land within the City's UGB, the Port was included with the City and Morrow County when they developed an agreement to promote consistency in planning and development efforts between governmental and quasi-governmental entities. The agreement states that Morrow County shall retain responsibility for land use decisions and actions affecting lands within the City of Boardman's UGB. Most of the proposed transmission line will be on land within the City's UGB, but approximately 400 m (500 yards) would be outside the UGB.

The proposed plant site is on land zoned Port Industrial (PI). The proposed transmission line would be on land zoned PI and General Industrial (MG) (see Map 6).

Transportation

The transportation network in the local area includes most modes of travel including: (1) highway travel on I-84, just south of the proposed site; (2) passenger and freight rail service on the Union Pacific Railroad corridor, immediately north of the proposed site; (3) barge transportation on the Columbia River, just north of the Union Pacific Railroad corridor; (4) air service at the Boardman flight strip, about 8 km (5 miles) west-southwest of the City of Boardman; (5) public and private (Port) roads in the immediate vicinity of the proposed project; and (6) trails in the Umatilla National Wildlife Refuge used for hiking and horseback riding.

Currently, two passenger trains and 24 freight trains use the Union Pacific Railroad corridor adjacent to the proposed project site each day (Hill, 1993). This rail corridor is a portion of Union Pacific's main line, which travels to Omaha, Nebraska, and points east. Average daily traffic on I-84, just south of the proposed site, was 9,450 vehicles as of 1991, the most recent information available (Alexander, 1993). Average daily traffic on Columbia Avenue near the proposed project was 3,100 vehicles in 1989, the most recent information available, and 1,800 vehicles for Ullman Boulevard during the same year (Morrow County, 1993).

Recreation Resources

Existing and potential recreational resources within an 8-km (5-mile) impact area are shown on Map 7 and described below.

A wide range of recreational opportunities are available within 8 km (5 miles) of the plant site, including facilities for hunting, fishing, picnicking, swimming, boating (including launching facilities), nature observation, and hiking. Camping and picnicking are permitted at Boardman Marina Park, which is operated by the Boardman Parks and Recreation District. Boat ramp access to the Columbia River is available at Boardman Marina Park and the Umatilla National Wildlife Refuge. Swimming and other beach activities including sailboarding are popular at Boardman Marina Park and at beach areas along the Columbia River.

There are no recreational facilities, and limited opportunities at the proposed plant site for recreation and within the proposed right-of-way for the transmission line.

The Columbia River is fished for sturgeon, salmon, steelhead, bass and walleye.

Umatilla National Wildlife Refuge is 9,250 ha (22,860 acres) along the Columbia River north and northeast of the proposed plant site. The refuge is also popular for fishing. McCormack Slough, ponds and water impoundments on the refuge are open to fishing February 1 through September 30. The refuge has trails for hiking, horseback riding, and waterfowl viewing. About 186 ha (460 acres) of refuge land are farmed to provide food and cover for wildlife. Horseback riding is popular along the Columbia River within this refuge. Camping and overnight parking are not permitted in the refuge.

The Port of Morrow and Boardman Regulated Hunt Areas (RHA) are within the impact area and provide opportunities for upland game bird, waterfowl, and big game hunting during authorized seasons. The RHA Area includes the Willow Creek Wildlife Area, Sixmile Canyon Potholes Area, Threemile Canyon, Taggares Farms, and adjacent land south of I-84. Port of Morrow RHA, North Unit, includes the Coyote Springs Wildlife Area and the area north of I-84 to the Umatilla National Wildlife Refuge. Hunting is permitted on about 70 percent of the refuge. The McCormack Unit of the refuge issues waterfowl permits to hunt waterfowl, with upland game permits also available.

A 9-hole golf course is located at the west end of Wilson Road, southwest of Boardman. Riverside High School in Boardman has athletic facilities for tennis, basketball, baseball and other sports, and a running track. Additional baseball diamonds are at Boardman Marina Park, Boardman City Park and Sam Boardman Elementary School on West Wilson Road. Sam Boardman Elementary School and Boardman City Park have playgrounds. A privately owned indoor riding arena is south of Boardman.

Messner Pond, in the Port of Morrow adjacent to the proposed plant site, is occasionally fished for warm water species, primarily bass and walleye. There are no designated trails along the east side of Messner Pond. Messner Pond is also used by Morrow County residents and tourists for birdwatching and wildlife viewing. Hunting is permitted at Messner Pond only by permit from the Port of Morrow. According to the Oregon Department of Fish and Wildlife, Messner Pond is discussed in several Oregon birding guides.

Other Nearby Recreational Facilities

Many recreation facilities outside the impact area but within the vicinity are used by Morrow County residents. In addition to the boat ramp facilities discussed above, boat access to the Columbia River is also available at Irrigon Marina Park and Quesnel Park (Threemile Canyon). Hat Rock State Park, 13 km (8 miles) east of Umatilla, is a 297-ha (735-acre) park on the banks of the Columbia River. Picnicking, hiking trails, and fish viewing areas are available at Hat Rock State Park. McNary Dam, and Cold Springs Recreation Area also have boat facilities.

The Cold Springs National Wildlife Refuge is a 1260-ha (3,100-acre) refuge, 11 km (7 miles) east of Hermiston around Cold Springs Reservoir. The refuge has a trail system for hiking and wildlife viewing. Hunting is permitted on 506 ha (1,250 acres) of the refuge, and the reservoir is fished for warm water species. A boat ramp is available at South Point, and parking and rest rooms are also available.

Fishing is popular in the Umatilla River, with steelhead the primary game fish. An asphalt boat ramp enters the river at Nugent Park. Parking and rest room facilities are available.

Future Recreation Opportunities

Morrow County, the Port of Morrow, and the City of Boardman do not have plans to develop any new recreation facilities or opportunities. Existing recreational facilities will be more than adequate to meet the needs of an increased population caused by construction and operation of the proposed plant according to the Planning Director of Morrow County.

The Morrow County Comprehensive Plan (1986) has 20 Recreation Policies, with the first policy stating that the county wants to ". . . encourage the development of public meeting places and indoor recreational facilities for all age groups, with special attention to young adults." The county encourages combining certain recreation facilities and activities with the school district to reduce public costs. At this time, there are no plans to build any new facilities associated with schools. However, Morrow County encourages continued and expanded use of schools for community activities, including using playing fields on school grounds.

A recreation plan for Messner Pond was developed but never implemented. The stated goal of the plan was to provide additional recreational opportunities and to aesthetically enhance the industrial zone, while maintaining the wildlife values of the area. This included plans for carp management, trail building, and the addition of a picnicking area on the northeast side of the pond.

4.1.2 Natural Resources

Regional Geology

The proposed plant site is within a 129-km (80-mile) wide unit of plain and low plateau topography called the Walla Walla Section of the Columbia River Plateau Physiographic Province. The plain is underlain by rocks of the Columbia River Basalt Group and the Dalles Formation. These bedrock units are covered by glaciofluvial deposits and loess. The Columbia River Basalt Group is mostly flood basalts extruded during the late Tertiary between 17 to 6 million years before present (B.P.). They are collectively up to 3.7 km (12,000 ft.) deep. The beds were later deformed into many structural features including folds, faults and basins. Major structural features include the Blue Mountain Anticline southeast of the site, the Rattlesnake Hills Anticline and Wallula-Walla Walla Fault System to the northeast, and the Dalles-Umatilla Syncline to the southwest. (PGE, 1993.)

Local Geology

The proposed plant site is underlain by river deposited sands, gravels, and cobbles, extending approximately 17-18 m (55-60 ft.) deep. The river deposits are underlain by the Columbia River Basalt Group. The Columbia River shoreline is approximately 190 m (625 ft.) north of the proposed generation plant. The proposed plant site and transmission line corridor are within the *historic* Columbia River floodplain. However, dams on the Columbia River now regulate its flows, so the proposed locations for the plant and transmission line are not now considered in the Columbia River's 100-year floodplain.

Seismic Hazard

Ground Shaking - The proposed plant site lies within the Columbia River Plateau Seismotectonic Province. Two fault zones/faults within 100 km (62.5 miles) of the site, the Walla Walla Fault Zone and the Toppenish Ridge Fault, are possible seismic generation sources (Ebasco Infrastructure, 1993). The estimated maximum magnitude of the Walla Walla Fault Zone, which is approximately 80 km (50 miles) from the proposed site, ranges between 6.5 and 6.7 on the Richter scale. The Toppenish Ridge Fault, which is approximately 136 km (85 miles) from the proposed site, is considered capable of generating an earthquake of 7.3 in magnitude.

Other possible sources of seismic activity are earthquakes in adjacent Seismotectonic Provinces, subduction earthquakes or intraplate earthquakes.

No active faults (faults with surface displacement within the last 11,000 years) have been identified within the proposed plant, substation or transmission line alignment.

Estimated Earthquake Potential - Ebasco conducted a study for PGE to determine possible seismic sources and their associated earthquake potential. The potential is based on the combination of the estimated maximum magnitude of the event and its distance from the proposed facility site. Of the sites, including discrete known fault zones, seismotectonic provinces and the postulated subduction zone at the interface between the Pacific Plate and the North American Plate, the largest expected earthquake potential was estimated at MM VII intensity. MM VII intensity roughly equates to a magnitude of 5.5 +/- .5 on the Richter scale and .13 g to .16 g (peak horizontal acceleration).* This estimated magnitude is one of the controlling factors in the design of the facility.

Local Soil Conditions

Two soil phases exist within the study area, Burbank loamy fine sand and Quincy loamy fine sand. Both soil types are excessively drained. Runoff is slow, and water erosion hazard is slight. Soil blowing hazard is high. Protection from soil blowing is critical.

The soil at the plant site is Burbank loamy fine sand. The site has been extensively mined for gravel and then was overlain with 2-4 m (8-13 ft.) of fill dredged from the Columbia River. The fill is intermingled sands, gravels, and cobbles. Natural soils below the fill are dense cobbles and dense sands. (See Exhibit G-3 in Volume 1 of PGE, 1993.)

Soils along the transmission route are Burbank loamy sands at the plant site, then change to Quincy loamy fine sand along the proposed route of the tapline to the existing BPA line. Test holes have been drilled along the proposed electrical transmission line alignment. Soils are naturally deposited dense sands, gravels and cobbles.

*Note: BPA estimates a MM VII intensity to be approximately 6.0 on the Richter Scale and equivalent to approximately .24 g (peak ground acceleration).

Water Resources

General - Aquatic systems protected under the Federal Clean Water Act (CWA) in general are rivers, stream, lakes, estuaries and special aquatic sites. Sections 402 and 404 of the CWA describe certain conditions that must be met if pollutants (including sediment) or fill are discharged into areas designated as Waters of the United States. In Oregon, the Division of State Lands (DSL) and the U.S. Army Corps of Engineers (Corps) regulate the discharge of fill (ORS. 196.800-.990) into these waters. Waters of the State include most wetlands and other aquatic habitats. Delineation criteria used by the Corps and the Oregon DSL to determine the extent of jurisdictional wetlands are published in *Corps of Engineers Wetlands Delineation Manual, Tech. Report Y-87-1.* Criteria are based on the presence of positive indicators for three parameters: (1) wetland hydrology; (2) wetland vegetation; and (3) hydric (requiring moisture) soils.

Surface Water - Three surface water systems occur within or adjacent to the plant site: the Columbia River; Messner Pond; and gravel mining ponds (see Map 8).

The Columbia River, adjacent to the project site, is the major water body in the area. Water levels in the river are artificially maintained by John Day and McNary dams.

Messner Pond, a former embayment of the Columbia River, is about 12 ha (30 acres) and is within 181 m (600 ft.) of the plant site property line. Although water in the pond is restricted by the Union Pacific Railroad right-of-way, two culverts connect the pond to the river. Surface drainage from the southeast also recharges water in Messner Pond. An analysis of cooling tower drift effects on the water quality of Messner Pond was prepared for PGE by Beak Consultants is in Appendix I. It provides information on the existing water quality of the Columbia River and Messner Pond.

The National Wetland Inventory (NWI) map for Boardman, Oregon (1982) was reviewed. Wetlands indicated on the NWI are shown on Map 8. Wetlands are indicated on the NWI within the proposed Coyote Springs Plant site. These open water sites are the result of gravel extraction by Ready Mix Limited and are identified as being “excavated” on the NWI. They are part of the gravel mining process and most have been filled as the mining operation moved from west to east. The irrigation/mining pond that lies immediately west of Messner Pond that would be impacted by construction of the plant, is the only open water site mapped in 1982 that still exists on the site.

The pond within the construction site of the main plant is one of many gravel ponds in the vicinity shown as palustrine/open water/permanent/excavated on the National Inventory sheet (NWI, Boardman, Oreg., 1981). It is called Toadvin Pond and is a permitted (ODWR permit #G10550) source of irrigation water for the Port. Approximately 2000 m^2 (1/2 acre) of this pond will be filled for the foundation for the plant. Discharging fill into the gravel mining pond that is currently being mined, generally is not a regulated activity under Section 404 of the Clean Water Act. No other aquatic systems occur along the proposed transmission line location.

Oregon Division of State Lands regulates the discharge of fill or the removal of material from waters of the state. Oregon does not regulate surface mining pits if the site is not protected in the local comprehensive plan. The gravel mining pond is not regulated under the Oregon Removal Fill law (OAR 141-85-010.20. (c)(F.).

Groundwater - Because surface water in the Columbia Plateau is almost fully allocated, groundwater is heavily used. The regional aquifer system, formed in sedimentary material interbedded within basalt flows, is the major source of deep groundwater for municipal, industrial, domestic and irrigation uses within the Columbia Plateau. Use of deep groundwater has lowered levels as much as 30 m (100 ft.) in some portions of the aquifer. Water quality in shallow alluvial wells is generally poor and water from these wells is used for irrigation. Water levels in the shallow alluvial aquifer have been raised by the discharge of irrigation water into these porous, sandy soils. Permanent features like wetlands, ponds and perennial streams have been established on this historically dry land. Many ponds and wetlands near the plant site are created and recharged by surface/irrigation water.

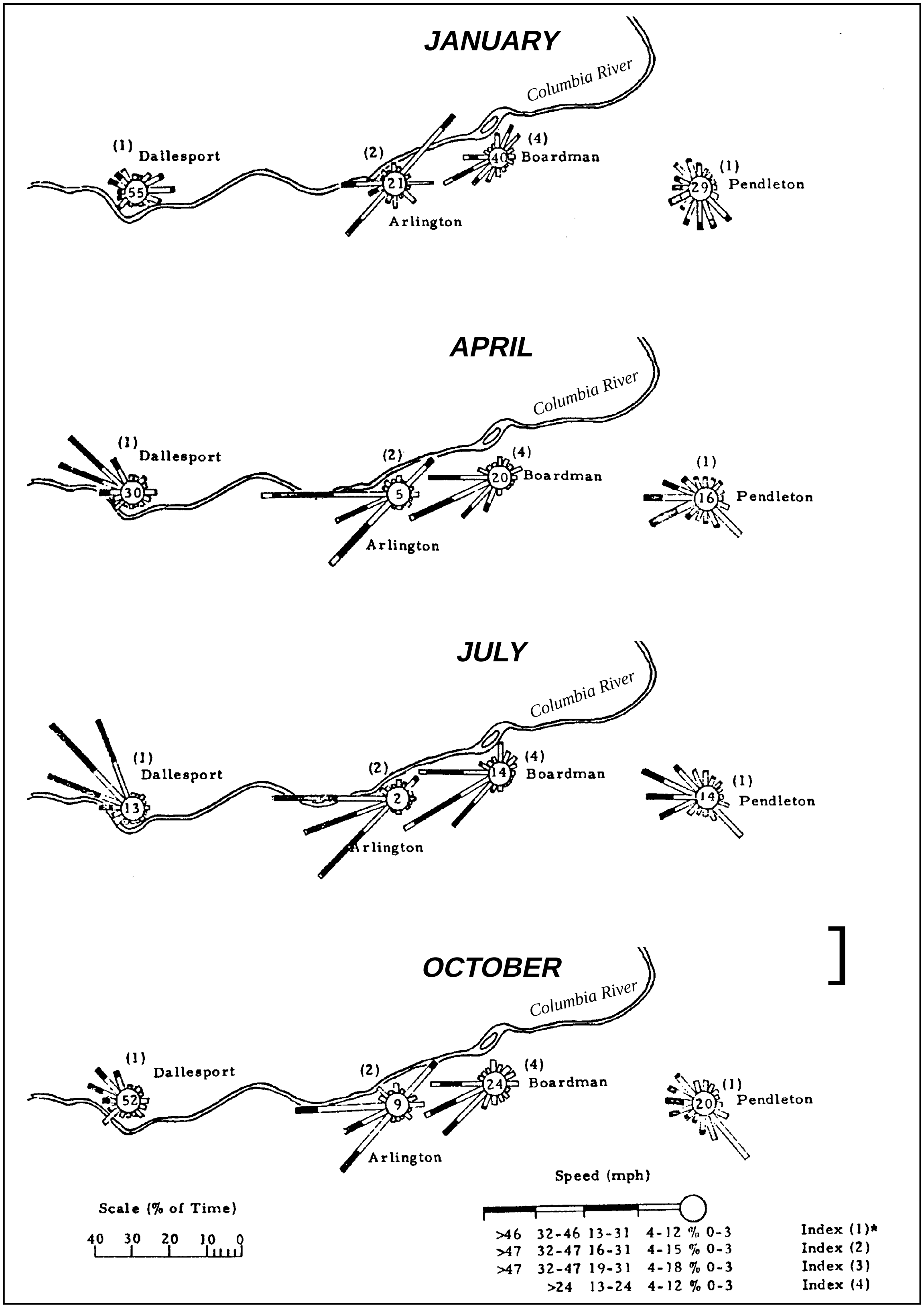
The Port obtains water from two aquifer systems: a shallow alluvial aquifer; and a deeper basalt aquifer. The Port has eight permits for water rights from three basalt aquifer wells and eight alluvial aquifer wells. The Port also has a permit to use water from the Columbia River. (PGE, 1993.)

Air Quality

The proposed plant site is in relatively flat terrain near Lake Umatilla (the Columbia River). Terrain to the south of the site slopes gently upward, with the nearest abrupt terrain change about 19 km (12 miles) to the south. Washington is across the river to the north. In Washington, a series of moderately sloped ridges line the Columbia River.

Joint frequency distributions of wind direction and wind speed, commonly known as wind roses, are presented in Figures 4-1 and 4-2. These figures illustrate that the wind at the site is predominately from the west and southwest quadrants and that there are frequent northeasterly winds in the winter months as high pressure moves west from eastern Oregon and Washington. Winds often blow from the west and southwest as marine air moves through the Columbia River Gorge. The wind roses also show that calm wind conditions are more common in the fall and winter than during spring and summer. Data presented in these wind roses is dated (1976 and 1935-38, respectively). However, direction and speed frequencies are not expected to change appreciably from year to year.

Figure 4-1
Wind Direction and Speed in the Boardman Area (1976)



Morrow County is designated by the ***Environmental Protection Agency (EPA)*** as an unclassified/***attainment area*** for ***criteria pollutants***, which means insufficient ambient air data is available to determine whether ***ambient air*** exceeds ***National Ambient Air Quality Standards (NAAQS)***. EPA has determined that the Wallula area in Washington State is a moderate ***nonattainment*** region for particulate matter 10 microns or less ***(PM-10)***. EPA is considering expanding this nonattainment region to include larger portions of Benton and Franklin counties. Benton and Walla Walla counties are directly north of the proposed facility, across the Columbia River.

EPA has also designated all areas in the U.S.--except pristine areas such as National Parks--as ***Class II areas***, allowing limited industrial growth. Thus the proposed facility is consistent with EPA ***airshed*** designations.

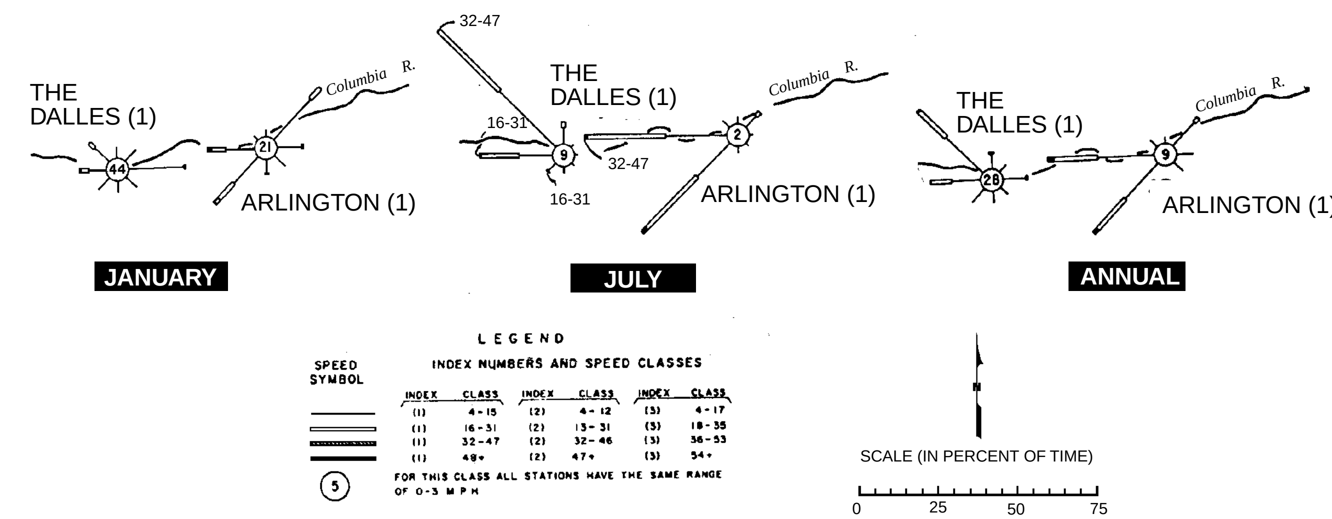
There has been one ambient air monitoring study in the Boardman area. In the mid-1980s, PGE monitored ambient air for an Air Contaminant Discharge Permit for its Boardman Power Plant. This study monitored two of the three pollutants identified as triggering New Source Review/Prevention of Significant Deterioration (NSR/PSD) requirements for the Coyote Springs Plant. Study results reflect the influence of PGE's Boardman Power Plant.

The study measured annual average total suspended particulate (TSP) in the range of 20-30 ug/m^3. All annually averaged TSP measurements were less than 50 ug/m^3, the annual geometric mean NAAQS for TSP/PM-10. However, the study recorded several exceedances of the 24-hour TSP/PM-10 NAAQS of 150 ug/m^3. These exceedances were associated with strong winds that create windblown dust, a condition common to eastern Oregon and Washington.

The study also monitored sulfur dioxide (***SO_2***). Measurements indicated that the three-hour sulfur dioxide average was 424 ug/m^3, the 24-hour average 112 ug/m^3, and the annual average 1 ug/m^3. These levels are below the national primary standards of 80 ug/m^3 (annual mean) and 365 ug/m^3 (24-hour maximum). The national secondary ambient air standard, 1,300 ug/m^3 (3-hour average), also was not exceeded. The Boardman study also monitored nitrogen oxides in the form of nitrogen dioxide (***NO_2***). The annual NO_2 ambient concentration was 30 ug/m^3, compared to the NAAQS of 100 ug/m^3 (annual average).

Figure 4-2
Wind Direction and Speed Boardman Area (1935-38)

STATION	LAT.	LONG.	ALTITUDE (feet)	OBSERVATION TIME	PERIOD OF RECORD	ANEMOMETER HEIGHT (feet)
Arlington	45° 43'	120° 08'	877	Hourly	6/1935-38	82



The only pollutant triggering major NSR/PSD review requirements not monitored during the Boardman Power Plant study was carbon monoxide (***CO***). Background CO levels in the Boardman area are expected to be low because this region is not highly industrialized and does not have heavy automobile traffic. Ambient concentrations of other pollutants of concern such as ***volatile organic compounds (VOC)***, sulfuric acid and beryllium are also expected to be low in this region.

Class I Areas and National Scenic Areas - The proposed facility is required to go through the New Source/Prevention of Significant Deterioration permitting process (NSR/PSD). Typically, under PSD requirements, impacts of criteria pollutants emitted from proposed facilities are only evaluated for the nearest Federal ***Class I area***. However, the Oregon NSR/PSD process strongly encourages impact assessment of all Class I areas within 200 km (120 miles) of proposed projects. Three Class I areas are within 200 km of the proposed facility and were evaluated for possible impacts: Mt. Hood Wilderness Area, Eagle Cap Wilderness Area and Strawberry Mountains Wilderness Area. The Columbia Gorge Scenic Area, although not designated a Class I area was also included in the evaluation. (See Section 5.1.1. for impact discussion.)

Vegetation

Plant Associations - Plant associations at the site are common in the Boardman-Umatilla area and are characteristic of disturbed communities of the shrub-steppe vegetation zone in the Columbia Basin physiographic province. Vegetation is primarily adapted to a dry environment (xeric) and non-native. Forested areas surrounding ponds are dominated by Russian olive (*Elaegnus angustifolia*), and common cocklebur (*Xantheum strumarium*), grading into tumbleweed (*Salsola kali*), tumblemustard (*Sisymbrium officinale*), common yarrow (*Achillea millefolium*), cheatgrass (*Bromus tectorum*), intermediate wheatgrass (*Agropyron intermedium*), and tarweed (*Amsinckia lycopsoides*). In less disturbed areas the composition changes slightly to include antelope brush (*Purshia tridentata*), and sagebrush (*Artemesia tridentata*). This vegetation occurs along the Port of Morrow access road in the proposed transmission line corridor.

Messner Pond is a lake (lacustrine) system surrounded by swamp ***(palustrine) emergent wetlands*** grading into forested wetlands. Emergent wetlands are dominated by hardstem bulrush (*Scirpus acutus*), broad-leaf cattail (*Typha latifolia*), and ovate spikerush (*Eleocharis ovata*) grading into forested wetland dominated by Russian olive (*Elaegnus angustifolia).* These forested wetlands next to Messner Pond are about 30 m (100 ft.) to the north of Ullman Boulevard. They also form a thin unit between Messner Pond and the irrigation/gravel mining pond.

Vegetation near the irrigation/gravel mining pond is sparse, covering only about 20 percent of the surface. The dominant vegetation, cheatgrass (*Bromus tectorum*), and tumbleweed (*Salsola kali*), is representative of disturbed xeric plant communities. No hydrophytic or aquatic vegetation was observed. (See Exhibit R, PGE, 1993.)

Federally Protected Plants - No Federally listed ***threatened*** or ***endangered*** plant species are known to occur within the project area. Within Oregon, none of the plant species currently listed under the Endangered Species Act (ESA) are found near the project vicinity. Three Federal candidate species: Thompson's sandwort (*Arenaria franklinii var. thompsonii*), Lawrence's milkvetch (*Astragalus collinus var. laurentii*), and Columbia cress (*Rorippa columbiae*), possibly occurring within the project area, were not present during a plant survey conducted in July 1993.

State Protected Plants - Thompson's sandwort, Lawrence's milkvetch, and Columbia cress also constitute Oregon state species of concern, and as noted, these were not found on or near the proposed plant site. These candidate species are also listed by the Oregon Natural Heritage Data Base. A fourth plant, Robinson's onion, became a state candidate species in 1980 but was subsequently dropped from consideration and may be extinct in Oregon.

Fish and Wildlife

The proposed plant site is outside of any wilderness study, research, natural, wildlife, or other similarly designated area. However, many wildlife and fish species are found within the project vicinity. Several designated wildlife refuges and other natural areas are nearby.

Most of the proposed 2.4 km (1.5 mile) transmission line route is vegetated. An 0.8 km (0.5 mile) portion of the transmission line is shrub-grassland and cultivated fields entirely within the Port of Morrow Industrial Park. Both areas provide little wildlife habitat. Wildlife use of this area is likely to favor those species associated with industrial sites (e.g., house sparrow [*Passer domesticus*], small mammals, and gulls), agricultural fields (e.g., California quail [*Callipepla californica*], and ring-necked pheasant [*Phasianus colchicus*]), or disturbed shrub-steppe habitat (e.g., coyote [*Canis latrans*]) and western meadowlark [*Sturnella neglecta*]).

Several fish species are present in Messner Pond including smallmouth bass, crappie, and rough fish such as carp, northern squawfish and peamouth. A wetland community exists next to the pond, but wildlife use of the site is somewhat limited by poor quality habitat plus ongoing industrial activities and adjacent development. Some small mammals (e.g., mice and voles) and birds (e.g., gulls, sparrows, doves) may be found in this area. Small ponds also provide some limited aquatic ***habitat*** for waterfowl and shorebirds.

Federally Listed Animals - The U.S. Fish and Wildlife Service (USFWS) reported two Federally listed species known or suspected to seasonally occur near the project area: the bald eagle (threatened) and peregrine falcon (endangered).

There are no bald eagle nest sites within or adjacent to the impact zone of the facility. No portions of the facility area have been designated as critical habitat for the bald eagle. Approximately 20-100 bald eagles winter along the Columbia River and within the Umatilla National Wildlife Refuge. There are two Oregon Natural Heritage Program (ONHP) occurrence records within the facility area: approximately 16 km (10 miles) southwest of the facility site on Carty Reservoir; and 4.8 km (3 miles) northeast of the facility site on the Umatilla National Wildlife Refuge.

The peregrine falcon is almost exclusively a cliff-nesting species and primarily found in locations near water. Occurrence within the project vicinity would be expected only during migration. The U.S. Fish and Wildlife Service, Olympia Field Office, listed this species as potentially occurring (but rare) in the project area in both summer and fall within the Umatilla National Wildlife Refuge. There are no Oregon Natural Heritage Program records of occurrence within the project area. No peregrine falcons have been reported around Messner Pond, although an occasional bird may utilize the area.

No Federally listed threatened or endangered animal species were recorded during four wildlife surveys (May and June 1993). One Federal candidate species, a long-billed curlew (*Numenius americanus*), was recorded northeast of Messner Pond in grassland-shrub habitat during the surveys.

Listed fish species noted by the National Marine Fisheries Service (NMFS) include Snake River spring/summer chinook salmon (threatened), Snake River fall chinook salmon (threatened), and Snake River sockeye salmon (endangered). The Oregon Fish and Wildlife Commission list the Snake River spring/summer chinook salmon and Snake River fall chinook salmon as threatened in 1993 as provided under Oregon law. Although the project does not directly affect these species, the Columbia River in the project vicinity serves as a migratory corridor.

Additional information on Federally listed threatened and endangered species is included in Chapter 5 and within Appendices A and C.

State Special Status Animals - Regulatory protection at the state level is based on citations within OAR 635-100-040. Three Oregon state sensitive species (American white pelican [*Pelecanus erythrorhynchos*], bank swallow [*Riparia riparia*], and Franklin's gull [*Larus pipixcan*]) were recorded during wildlife surveys conducted in May and June 1993. All three of the state sensitive species were observed at Messner Pond during the late spring and early summer surveys noted. Other species known or suspected to occur during other seasons of the year include the bald eagle (threatened), peregrine falcon (endangered), Barrow's goldeneye (protected), and bufflehead (protected), as noted in Appendix A.

Several special status species were identified as occurring infrequently in the project area (yellow-billed cuckoo, pygmy rabbit, tri-colored blackbird, upland sandpiper) or using habitat that would not be altered by the project (bufflehead, American white pelican, bull trout, Barrow's goldeneye, dusky Canada goose).

4.1.3 Socioeconomics and Public Services

This section of the environmental document describes the social and economic characteristics of the local area, and the essential local government services available to area residents.

Social Characteristics

Population - The population of Morrow County as of July 1, 1992 was 8,100 (Portland State University, 1993). The county is about 5,500 sq. km (2,000 sq. mi.) with a population density of nearly 1.4 persons per sq. km (4 persons per sq. mi.). Only eight of Oregon's 35 other counties are less densely populated that Morrow County. All are in eastern Oregon.

The five incorporated communities in Morrow County and their populations (as of July 1, 1992) are the City of Boardman (1,480), the City of Heppner, county seat (1,420), the City of Irrigon (830), the City of Lexiton (290) and the City of Ione (240). As of July 1992, about 52 percent of the county's residents lived in these five communities, a slight reduction from the 1980 Census, when 55 percent of the county's residents lived in these five communities. The county's population is becoming increasingly rural.

As of July 1992, Umatilla County, the county immediately east of Morrow County, had a population of 61,000. The county is about 5,100 sq. km (3,200 sq. mi.), for a population density of 12 persons per sq. km (19 persons per sq. mi.). The principal urban communities in Umatilla

County are the City of Pendleton (15,400), the City of Hermiston (10,150), the City of Milton-Freewater (5,630), the City of Umatilla (3,090), the City of Stanfield (1,580) and the City of Pilot Rock (1,500). Approximately 66 percent of Umatilla County's population lived in 12 incorporated communities in 1992, approximately the same proportion of the county's residents 12 years earlier (65 percent).

The closest urban area with a population over 25,000 is Kennewick and Richland, Washington with 1993 populations of 45,000 and 34,000, respectively. These communities are about 70 km (45 miles) northeast of the City of Boardman. The closest urbanized area in Oregon with a population over 25,000 is the City of Gresham, with a 1992 population of 72,000. The City of Gresham is 225 km (140 miles) west of the City of Boardman, on the east side of the Portland, Oregon metropolitan area, which has a population over 1,300,000.

The populations of Morrow and Umatilla counties have increased by only 4 percent since 1981, while Oregon's population has increased 13 percent over the same period. The main reason for the slow growth experienced by both counties has been the amount of population lost through migration. During the decade of the 1980s, Morrow County lost 650 persons, while Umatilla County experienced a loss 4,800 persons, approximately 8 percent of their respective populations. (Portland State University, 1992.) Migration cancelled out most growth from natural increase (births over deaths). The migration was likely related to the relatively high unemployment rate in the area, and lack of opportunities experienced by the resident population, particularly the area's youth.

Employment - The combined labor force of both Morrow and Umatilla counties as of July 1, 1992 was 33,860 with an unemployment rate of 9.5 percent. The employed population amounted to 30,630. (Oregon Employment Division, 1993). With a combined population of 69,100 persons in the two counties, the labor force participation rate was just under 50 percent.

During the late 1970s, employment in Morrow and Umatilla counties expanded rapidly. The growth in employment then slowed considerably before actually declining in the 1980s. Employment in the two counties peaked in 1981, at the start of the 1981-83 recession, with 31,490 jobs. The labor force, however, continued to climb in the mid-1980s, peaking in 1986 with 34,900 people. The unemployment rate in the two counties reached 12.1 percent in 1986. Although the unemployment rate has subsided significantly over the past few years, it remains high (8-10 percent). The Oregon Employment Division expects the unemployment rate to remain high in the 1990s. (Oregon Employment Division, 1993.)

The agricultural sector is the largest sector of employment in Umatilla and Morrow counties. Including the agricultural portion of nondurable goods manufacturing, food processing and direct agricultural employment, the agricultural sector employed 7,200 people in 1991, nearly 25 percent of total employment. Three sectors follow the agricultural sector in people employed within the two counties: government (approximately 5,600), and retail and services (approximately 2,500 each). Government employment is relatively high compared to other rural counties in the area, due to the Umatilla Army Depot, the Navy Bombing Range, the Umatilla National Forest, the Eastern Oregon Correctional Institution and the Eastern Oregon Psychiatric Center.

Housing - The 1990 Census shows that 3,410 housing units existed in Morrow County in 1990, with 82 percent (2,805 units) occupied when the Census was taken on April 1, 1990. The median value of occupied housing units in the county was $43,500 (in 1990 dollars). Of these occupied housing units, 68 percent (1,905 units) were owner-occupied, and 32 percent (895) were rental properties. Excluding multi-family dwellings, mobile homes and homes on more than 4 ha (10 acres), approximately 60 percent (525 units) of the owner-occupied housing units had an existing mortgage. The median mortgage payment was $536, which was 17.8 percent of 1989 household income. Of those 32 percent of occupied households that were rented, the median gross rent amounted to $332, which was 23.7 percent of 1989 household income. The vacancy rate for non-rental units was 1.7 percent, while the vacancy rate for rental property, was 10.6 percent. (State of Oregon, 1990.)

Umatilla County's 1990 housing stock was 24,335 total units, with 90 percent (22,020 units) occupied. The Census shows that Umatilla County had more rental properties than Morrow County, both in absolute numbers and as a percentage of the whole. Only 62 percent (13,650 units) of Umatilla County's housing stock was owner-occupied, while the remainder, 38 percent (8,375 units), was occupied by renters. The median value of all occupied housing units was $47,800 (in 1990 dollars). Excluding multi-family dwellings, mobile homes and homes on more than 4 ha (10 acres), about 61 percent (5490 units) of the owner-occupied housing units had an existing mortgage. The median mortgage payment was $552, which was 19.2 percent of 1989 household income. Of those 38 percent of occupied households rented, the median gross rent amounted to $313, which was 19 percent of 1989 household income. The vacancy rate for homes that were not for rent was 2.1 percent, while the vacancy rate for rental properties was 8.6 percent.

Statewide on Census Day, April 1, 1990, 63 percent of the occupied housing units were owner-occupied, with a median value of $66,600. The median mortgage payment was $650, which was 20.4 percent of monthly gross household income in 1989. The vacancy rate for non-rental properties was 1.4 percent. The median rent payment was $344 for rental properties, with a vacancy rate of 5.3 percent. A 5 percent vacancy rate is considered a normal vacancy rate for residential rental properties. The vacancy rates experienced by both Morrow and Umatilla counties (10.6 percent and 8.6 percent, respectively) are considered relatively high.

The temporary housing stock in the area consists of those single family houses and apartment units identified above that are in the rental market, in addition to motel units. Mobile home parks, in some instances, have mobile home units "that are available for rent, but normally provide only physical space and utility "hook ups" for those with their own accommodations. This is also true for RV parks.

Within the Boardman/Hermiston /Umatilla area their are 11 motels that have an inventory of 490 units (See Table 4-1); 20 mobile home/RV parks in the Umatilla, Hermiston, Pendleton, Pilot Rock and Milton Freewater area that supply 132 spaces, seven of these mobile home/RV parks are located near Hermiston alone; and 36 apartment complexes that are located in the Boardman, Hermiston, Umatilla, Irrigon, Pendleton and Milton-Freewater area.

Economic Characteristics

The economy of Morrow and Umatilla counties is primarily based on agriculture, with government employment being an important contributor. Counting direct agricultural employment, food processing, and nondurable goods wholesale employment, the agricultural sector within Morrow and Umatilla counties employed 7,155 persons in 1991. (Oregon Employment Division, 1993.) This amount of employment does not include the portions of transportation, and other sectors directly involved in agricultural activities. Government employment is also high for the region. Federal government employment is 16 percent of government employment, state government employment makes up 24 percent, and local government employment is 60 percent of government employment, most for education.

Table 4-1
Motel Accommodations in the Project Area

COMMUNITY	NUMBER OF MOTELS	NUMBER OF MOTEL ROOMS
Boardman	3	111
Hermiston	4	193
Umatilla	4	181
Total	11	485

Source: Hermiston Chamber of Commerce, July 1993

Median Family Income - Median family income is a measure of income at the midpoint of all household incomes, for a particular defined area. Usually larger communities have a more diversified economy because a larger population base can support businesses and services not found in smaller communities. These larger communities are likely to have a higher labor force participation rate, and a higher median family income, than smaller, more rural communities. In 1989 (the most recent information available), Morrow County's median family income was $23,970. This was 88 percent of the state median family income ($27,250) during the same year. (U.S. Department of Commerce, 1990.)

Per Capita Income - Per capita income is an estimate of total personal income divided by the area's total population. It includes wages, rents, interest, dividends, and all other "money" income. The per capita income is used as a rough measure of how well one area is doing compared to another. Overall, Morrow County's per capita income has been declining considerably since 1978, as compared with the per capita income for the State as a whole. In the 13-year period from 1978 to 1991, the County's per capita income has increased only 15 percent while the state's per capita income has more that doubled (Oregon Employment Department, 1993).

While Umatilla County's per capita income is slightly below that of Morrow County ($15,102 vs. $14, 805 for 1991), Umatilla County's per capita income has shown a stronger growth through the 1980s than Morrow County's. Umatilla County increased its per capita income 63 percent through the decade, while Morrow County's per capita income increased by only 18 percent.

Table 4-2
PER CAPITA INCOME FOR MORROW COUNTY AND THE STATE OF OREGON
(in $ millions)

YEAR	MORROW COUNTY	STATE OF OREGON	COUNTY AS A % OF STATE
1978	$13,100	$8,250	159%
1979	$13,350	$9,150	146%
1980	$12,790	$9,870	130%
1981	$11,200	$10,480	107%
1982	$9,390	$10,650	88%
1983	$10,780	$11,380	95%
1984	$12,700	$12,300	103%
1985	$12,350	$12,930	95%
1986	$12,200	$13,540	90%
1987	$12,490	$14,180	88%
1988	$14,370	$15,020	96%
1989	$15,640	$16,190	97%
1990	$17,340	$17,040	102%
1991	$15,100	$17,500	86%

Source: Bureau of Economic Analysis, U.S. Bureau of Commerce

Table 4-3
ASSESSED VALUE OF MORROW COUNTY AND THE STATE OF OREGON
(in $ millions)

YEAR	MORROW COUNTY	STATE OF OREGON	COUNTY AS A % OF STATE
1970-71	89	18,800	0.47%
1971-72	89	20,261	0.44%
1972-73	92	22,113	0.42%
1973-74	101	24,899	0.41%
1974-75	127	28,402	0.45%
1975-76	193	32,175	0.60%
1976-77	236	35,547	0.66%
1977-78	285	40,704	0.70%
1978-79	328	46,646	0.70%
1979-80	472	59,025	0.80%
1980-81	527	73,402	0.72%
1981-82	664	82,427	0.81%
1982-83	688	86,429	0.80%
1983-84	769	85,365	0.90%
1984-85	806	85,400	0.94%
1985-86	814	83,035	0.98%
1986-87	879	82,944	1.06%
1987-88	848	83,111	1.02%
1988-89	769	84,258	0.91%
1989-90	832	88,076	0.94%
1990-91	804	95,850	0.84%
1991-92	728	112,135	0.65%
1992-93	725	123,756	0.59%

Source: Bureau of Economic Analysis, U.S. Bureau of Commerce

According to the Oregon Employment Development Department, Morrow and Umatilla counties have been below the state average in per capita income over the years. During the late 1970s and early 1980s, however, Morrow County was considerably above the state average, as shown in Table 4-2, due to the construction of the Boardman coal-fired plant underway at that time, and also because potato and onion processing plants were being built. Large scale corporate farms in the area and extensive use of center-pivot irrigation systems have expanded the agricultural sector of the local economy in recent years. These new sources of raw materials have attracted the food processing industry to the area. (Electric Power Research Institute, 1982.)

Assessed Value of Morrow County - Morrow County's assessed value of all real taxable property has increased nine-fold since the early 1970s, increasing in value from $89 million in 1972-73 to $725 million in 1992-93 (see Table 4-3). Table 4-3 also reveals that the County's share of assessed value of taxable property against that of the assessed value of private taxable property statewide increased during the period of 1972-73 to 1985-86. From 1985-86 on, however, the County's share of private taxable property (as compared to Oregon's), has been declining, and has actually fallen in absolute dollars from $879 million in 1986-87 to $725 million in 1992-93. While Morrow County has realized this 18 percent decline in assessed value over the past six years, Oregon has realized nearly a 50 percent increase during this same period, increasing from $83 billion to $124 billion.

The apparent aberration in Table 4-3 showing a sharp rise in the county's share of assessed value in the 1970s and early 1980s, compared to Oregon as a whole, was related to construction of the Boardman coal-fired plant in the late 1970s, and also the addition of large potato and onion processing plants built in the county in the early 1980s. Since that time, however, as Table 4-3 reveals, property development in the county has not kept pace with Oregon as a whole.

Essential Government Services

Law Enforcement - Law enforcement services in the project area are provided by the Morrow County Sheriff's Office, which provides law enforcement services primarily to the unincorporated portion of Morrow County. The county, however, also maintains mutual aid agreements with the State of Oregon, larger incorporated cities within Morrow County, such as Boardman and Heppner, and neighboring counties. Primary responsibilities of the Morrow County Sheriff's Office is to conduct criminal investigations and to provide security. Providing traffic control is considered a secondary responsibility of all uniformed officers within the County Sheriff's Office.

The Sheriff's Office consists of seven sworn officers: the sheriff, an undersheriff, a detective and four deputy sheriffs. Response times depend on time of day, and location and availability of personnel. Response times for emergency services would normally be within 10 minutes and no more that 45-60 minutes on a worst-case basis (Morrow County Sheriff's Office, August 1993).

Fire Protection - Fire protection services in the project area are provided by the City of Boardman Fire Department and the Boardman Rural Fire District. These two fire departments include the same individuals who work out of the same fire station. The two separate departments exist for budgetary purposes only (Boardman Fire Department, August 1993).

The Boardman Rural Fire District encompasses approximately 160 sq. km (100 sq. mi.) and provides fire protection to the City of Boardman and to rural areas around the City of Boardman. At the present time firefighters consist of the Fire Chief and 18 volunteer firefighters. The Chief's position is a paid position, and as such, the Chief is an employee of the City of Boardman.

The Boardman Rural Fire District's primary responsibility is to provide fire protection services to the City of Boardman and the rural areas around the City of Boardman. The District has a 7.6 m^3 (2,000 gal.) water tender, a 12.5 m^3 (3,300 gal.) water tender with a 3.8 m^3 (1,000 gal.) per minute pump, a rescue unit, a 3.8 m^3 (1,000 gal.) water tender, and a personnel carrier. The City of Boardman maintains 3.8 m^3 (1,000 gal.) and 5.8 m^3 (1,500 gal.) water tenders (City of Boardman, April 1993).

The Boardman Rural Fire District also maintains mutual aid agreements with the City of Irrigon and the Umatilla Army Depot, each able to respond to a fire at the Port of Morrow within 15 minutes after receiving a call for support. In addition, the fire district can request help, if needed, from the fire brigade at the Boardman coal-fired plant, 16 km (10 miles) southwest of Boardman. The fire brigade has 47 members, each qualified to fight industrial structure fires. Additional help is also available from other fire districts in the county. These fire districts include Heppner, Ione, and Lexiton Fire Districts.

Water Service - The City of Boardman's municipal water supply is provided by a Ranney water collection system, one of two such systems currently being used in the State of Oregon (City of Boardman, July 1993). The water system draws both induced Columbia River water and groundwater from the shallow aquifer at the rate of 22.8 m^3 (6,000 gal.) per minute. According to the City's Public Works Director, this volume of water is sufficient to serve a community of 6,000 people. In addition to the existing well site, the City of Boardman has identified two additional sites that could be used to install additional Ranney units should that ever become necessary to increase the water volume to 60.6 m^3 (16,000 gal.) per minute, sufficient to serve a community of 16,000 people.

Sewage Treatment Facilities - The City of Boardman's sewage treatment facility has sufficient capacity for 4,000 residents. The current population of Boardman is approximately 1,500 (Portland State University, 1992). The existing sewage treatment facility should be adequate for some years to come.

Education/Schools - The Morrow County School District's boundaries are the same as the county's boundaries. As a result, all schools in the county are contained within a single county-wide school district, including those schools within the cities of Boardman and Irrigon. The school district operates four schools: two elementary schools, one junior high school, and one high school. Of these four schools, Riverside High School and Sam Boardman Elementary School in Boardman, and the A.C. Houghton Elementary School in Irrigon, are at capacity. The fourth, Columbia Junior High School in Irrigon, is nearing capacity. The school district hopes to pass a bond issue soon to provide for additional classroom space within these four schools. The school district needs to expand its facilities even if the Coyote Springs Plant is not constructed. (Morrow County School Superintendent, August 1993).

Library Services - Library services are provided to the local area by the Oregon Trail Library District, which maintains a library in the City of Boardman and in the City of Heppner. The library district, formed in early 1991, encompasses the northern portion of the county, about half of Morrow County. The library district serves a population of about 4,000 persons. (Oregon Trail Library, August 1993). Irrigon and Ione, and the remaining rural areas of Morrow County have elected not to join the library district.

Health Care - Health care services for the City of Boardman and the northern Morrow County area are provided by the Boardman Health Care Center in the City of Boardman. The health center is staffed by a physician's assistant and a nurse. Ambulance service is provided by Boardman Ambulance Service, also in the City of Boardman. The ambulance service has two ambulance units and is staffed by eight trained emergency technicians.

Morrow County residents are also served by the Good Shepherd Community Hospital and the Hermiston Community Health Clinic in the City of Hermiston.

Solid Waste Disposal - One sanitary landfill exists in Morrow County and two are currently used in Umatilla County. The sanitary landfill in Morrow County is the Finely Butte Waste Disposal Area. This landfill is about 18 km (11 miles) south of the City of Boardman, off Bombing Range Road. The landfill is approximately 200 ha (500 acres) and is projected to provide service for the City of Boardman, Morrow County, and current customers for 50 years at the present rate of use. If needed, additional land is available adjacent to the facility for expansion. The landfill accepts municipal solid waste only. The facility is not equipped to receive any toxic, hazardous or liquid wastes. Discussions of other waste issues are covered in other sections of this FEIS.

4.1.4 Public Health and Safety

Power plants and transmission facilities provide electricity for heating, lighting and other services essential for public health and safety. These same facilities can potentially harm humans. Contact with transmission lines can injure birds, people and aircraft. Power plants can impact air and water, and generate noise at levels potentially injurious to public health. Also, certain amounts of toxic and hazardous substances are used which pose a risk of emergency releases (spills) and thereby health and safety risks. Expanded discussions for these health and safety issues are provided in this section.

Air Impacts to Public Health and Safety - Air pollutants from stationary sources such as the Coyote Springs Cogeneration Plant are closely regulated under the Clean Air Act. The EPA and Oregon's Department of Environmental Quality (DEQ) have established acceptable emission rates for a wide range of air pollutants and have established ambient air quality standards based on public health and safety. Section 5 reports the air pollutants generated by the Coyote Springs Plant and how these compare with regulatory standards. The Coyote Springs Plant will be equipped with continuous air monitoring equipment to assure that actual emissions do not exceed authorized levels.

Toxic and Hazardous Materials - A review and data search (***level 1***) of the cogeneration plant site and lands along the transmission line route was done to determine if toxic or hazardous materials users, and/or generators might have used or accidentally contaminated the proposed site. No hazardous material sites, hazardous material generators or transporters, or records of hazardous chemicals or accidental spills were identified.

Toxic and solid waste material expected to be generated during plant operation are listed in Tables 3-2 and 3-3. Some solid waste material is classified as hazardous and would need careful handling and disposal to protect public health and safety. Section 5 describes these materials and special handling plans for them.

Electric and Magnetic Fields - Power lines, like electrical wiring and household appliances, produce ***electric fields and magnetic fields (EMF)***. Current (movement of electrons in wire) produces the magnetic field. Voltage (the force that drives the current) is the source of the electric field. The strength of these fields depends on the design of the line and distance from the line. Field strength decreases rapidly with distance. Electric and magnetic alternating-current (AC) fields induce currents in conducting objects, including people and animals. These currents, even from the largest power lines, are too weak to be felt. However, some scientists believe these currents might be potentially harmful and that long-term exposure should be minimized. Hundreds of studies on electric and magnetic fields have been conducted in the U.S. and other countries. However, today most concern about potential adverse health effects is focused on exposure to magnetic fields.

Electric and magnetic fields are found throughout a home. In homes the ***electric field*** strength from wiring and appliances is typically less than 0.01 kilovolts per meter (kV/m). However, fields of 0.1 kV/m and higher can be found *very close* to electrical appliances. Typical electric and magnetic field strengths for some common electrical appliances are listed in Table 4-4.

Average ***magnetic*** field strength in most homes (away from electrical appliances and home wiring, etc.) is typically less than 2 milligauss (mG). *Very close* to appliances carrying high current, fields of tens of hundreds of milligauss are present. Unlike electric fields, magnetic fields from outside power lines are not reduced in strength by trees and building material. So, power lines can be a major source of magnetic field exposure throughout a home located close to the line. Typical electric and magnetic field strengths for some BPA transmission lines are shown in Table 4-5.

Table 4-4
Typical Electric and Magnetic Field Strengths from Common Appliances
At 0.3 Meter (1 Foot)

Appliance	Electric Field (kV/m)	Magnetic Field * (mG)
Coffee Maker	.030	1-1.5
Electric Range	.004	4-40
Hair Dryer	.040	0.1-70
Television	.030	0.4-20
Vacuum Cleaner	.016	20-200
Electric Blanket **	.01-1.0	15-100

kV/m = kilovolts per meter   mG = milligauss

* By 1 to 1.5 meters (3-5 feet), the magnetic field from appliances is usually decreased to less than 1 mG.

** Values are for distance from a blanket in normal use, not 1 foot away.

Source for appliance data: Miller 1974, Gauger 1985

Because public concern is increasing over potential health effects of electric and magnetic fields and because a clear course of action has not been determined from present scientific evidence, BPA has developed interim guidelines. These guidelines state that BPA should not increase public exposure to electric and magnetic fields where practical alternatives exist. It is BPA's practice to consider potential electric and magnetic field exposure increases in the design and location of new transmission facilities. Increases in long-term, involuntary exposures to these fields are avoided if practical alternatives exist. A description of EMF impacts is provided in Section 5.

4.1.5 Noise

Noise is commonly defined as unwanted sound that disrupts normal human activities or diminishes the quality of the human environment. Transient noise sources, such as passing aircraft or motor vehicles, produce noise that is usually brief and excluded from regulation. Stationary sources such as the proposed plant emit more long-term noise. Ambient noise is all noise generated in the vicinity of a chosen site by typical noise sources such as traffic, wind, neighboring industries, and aircraft. The total ambient noise level is a typical mix of distant and nearby sources.

Table 4-5
Typical Electric and Magnetic Field Strengths
From BPA Overhead Transmission Lines

Transmission Lines	Electric Field (kV/m)	Magnetic Field * (mG)	
115- kV		**Maximum ***	**Average ****
Maximum on Right-of-way	1.0	63	30
Edge of Right-of-way	0.5	14	7
60 m (200 ft.) from center	0.01	1	0.4
230- kV			
Maximum on Right-of-way	2.0	118	58
Edge of Right-of-way	1.5	40	20
60 m (200 ft.) from center	0.05	4	2
500- kV			
Maximum on Right-of-way	7.0	183	87
Edge of Right-of-way	3.0	62	30
60 m (200 ft.) from center	0.3	7	3

kV/m = kilovolts per meter mG = milligauss

* Under annual peak load conditions (occurs less than 1 percent of the time)

** Under annual average loading conditions

Note: Above information obtained from a BPA study to characterize nearly 400 transmission lines in Pacific Northwest.

Noise is measured as a sound pressure level exerted on the microphone of a sound meter. Sound is measured in ***decibels (dB)***. Because the human ear is more sensitive to higher frequency (or higher pitched) sound, levels are adjusted by the sound meter and are reported as A-weighted decibels (**dBA**).

Local, state and Federal regulations and guidelines protect residents and workers from excessive noise. The Federal Noise Control Act of 1972 gave states the responsibility for noise control. Executive Order 12088 requires Federal agencies such as BPA to comply with state and local noise control regulations.

Noise regulations focus primarily on noise impacts on noise sensitive properties such as residences. Oregon's nighttime noise standard is 50 dBA. Oregon's daytime noise standard (55 dBA) has been equated with interrupting speech, which in some instances could impact public safety.

Noise measurements were made at the proposed plant site and at surrounding property where noise impacts are likely to occur (see Map 3). Ambient noise measurements vary. Activities that contribute to the ambient noise include existing industrial activities, traffic on I-84, and aircraft. Ambient noise levels and potential noise impacts from the project are reported in Section 5. Noise impacts to wildlife are also in Section 5.

4.1.6 Visual and Aesthetic Resources

The visual resource change introduced by the Coyote Springs Project is related to the (1) visual characteristics of the proposed facility, (2) existing visual character of the area and the degree to which the project would contrast, or be incompatible with that character, and (3) viewers exposed to this change and the degree of their exposure and sensitivity to visual change. The following discussion summarizes the visual resources and viewers potentially impacted, and the project’s visual characteristics. Plant emission impacts on visibility are discussed in Section 5 (page 5-20).

The 48-km (30-mile) visual impact zone used in the analysis is defined by Oregon Siting Regulations. The visual impact area extends through parts of Morrow, Umatilla, and Gilliam counties.

Visual Characteristics of the Proposed Facility - The plant will be on the east side of Ullman Boulevard, just south of the Union Pacific Railroad corridor, within the Port of Morrow Industrial Park. The plant site is rectangular measuring about 244 m by 355 m (800 ft. by 1,100 ft.) (See Figure 3-1 and Map 2). The utility corridor is south of the property. A 3 ha (7.5 acre) irrigation pond is just outside and east of the plant site. Messner Pond is adjacent to the irrigation pond.

The facility will have three main buildings: a main turbine generator building, an auxiliary equipment building, and an administration control building. In addition, there are major structures or equipment proposed that add significantly to the visual character of the project. Table 4-6 describes the visual characteristics of proposed buildings and structures.

Figures 4-3, 4-5, and 4-7 illustrate views of the plant site from I-84. Figures 4-4, 4-6, and 4-8 are simulations of the proposed facilities as they might appear from the same view points on I-84. The views from I-84 will be the most prominent public views of the site. The simulations were prepared for PGE's site application. They do not show the 500-kV transmission line. A simulation of the proposed transmission line is in Figure 5-2.

Outdoor lighting will be controlled by a photocell. The general lighting design for the exterior of the facility will minimize any obtrusive physical features. Exterior lighting will generally point inward toward the plant rather than outward toward approaching people or passersby. Perimeter lights along the fence will simply display that a fence exists. Aircraft warning lights will be installed on the two 64 m (210 ft.) tall heat recovery boiler stacks, if required by the Federal Aviation Administration (FAA).

Table 4-6
Visually Important Structures Located on the Plant Site

Visually Important Structures	Structure Type	Size/Height
Main Turbine Building	One story steel structure with metal panel exterior walls.	4460 sq. m (48,000 sq. ft.) plan area, 24 m (80 ft.) high.
Auxiliary Equipment Building	One story steel structure with metal panel exterior walls and boiler exhaust stack.	2230 sq. m (24,000 sq. ft.) plan area, 14 m (45 ft.) high.
Administration/Control Building	Two story steel structure with metal panel exterior walls.	465 sq. m (5000 sq. ft.) plan area, 9 m (30 ft.) high.
Heat Recovery Steam Generators	Steel structures on concrete foundation.	24 m (80 ft.) high, Exhaust Stack 64 m (210 ft.) high.
Cooling Towers	Wood frame on concrete basin/foundation	Length=91 m (300 ft.) Width=18 m (60 ft.) Height=12 m (40 ft.)
Demineralized Water Tanks	Metal tanks on concrete foundations.	8.5 m (28 ft.) high
Raw Water Tanks	Metal tanks on concrete foundations.	6 m (20 ft.) high

Visual Resources - The visual characteristics of the area were examined using USGS topographic maps, field reconnaissance and a review of visual and aesthetic resource portions of the project site application prepared by PGE. Included in the review are areas designated "significant or important" in the comprehensive plans of the counties potentially impacted as well as "protected areas" defined by Oregon EFSC.

The project would be on a low plateau that slopes gently downward from the foothills of the Blue Mountains to the Columbia River. The area has been categorized as part of the Walla Walla Section of the Columbia Plateau physiographic province or the Columbia Basin Province (Franklin and Dyrness, 1986). Topography in this part of the province is very gently undulating covered by shrub-steppe vegetation (Franklin and Dyrness, 1986). Present land use of the region is dryland grain farming on the uplands and hay farming in areas such as stream valleys, where irrigation is possible. Irrigation development has occurred on large tracts of land adjacent to the Columbia River. There is some cattle and sheep grazing, although not as extensive as in the past.

It is possible to see long distances in this region because of the relatively flat terrain. Map 9 illustrates the area visible (viewshed) from this project. The viewshed map was constructed using BPA's geographic information system. Areas that can see project structures (30 m [98 ft.] and above) are shaded. Sweeping views along the Columbia River and across the uplands to the south of the river are visible. However, views are disrupted by stands of Russian olive, cottonwood and poplar trees. Motorists on I-84 in Oregon and State Highway 14 in Washington can see the Boardman Coal Plant 6-9 km (10-15 miles) away. Depending on the relief and vegetation adjacent to I-84, it is sometimes possible to see buildings and the stack and plume from the Boardman Coal Plant. Another predominant feature of the landscape while driving along I-84 is the extensive network of transmission towers and lines in BPA's transmission line corridor.

Such sweeping views are impossible closer to the City of Boardman because of local topography, vegetation and trees. At the Boardman interchange on I-84 there are commercial developments. Residential development has occurred on both sides of I-84. Contiguous with the commercial and residential developments in Boardman are the industrial developments in the Port of Morrow (see Figure 4-3). The visually dominant industrial developments are the Boardman Chip Company plant and potato processors, Lamb Weston and Oregon Potato Company, immediately east of the proposed plant site. The potato processing plants are visible from I-84, and from local roads and residences. Visible plumes are emitted from these facilities.

Within the impact area is the U.S. Navy's 130 sq. km (50 sq. mi.) Boardman Bombing Range. The range contains relict grassland communities. Part of the range is used for bombing practice, part is leased for grazing, and part is managed as a Natural Research Area by The Nature Conservancy.

Morrow County - There are no areas designated as “significant" or "important” in the Morrow County Comprehensive Plan (1986). Page 120 of the Plan states:

> Morrow County contains a variety of landscapes, many of which may be considered to be scenic. The County has not, however, designated any sites or areas as being particularly high in scenic-resource value.

The road between Ukiah and Heppner is a scenic byway. However, this road is outside the 48-km (30-mile) impact area. (Morrow County, 1993.)

Umatilla County - Although not specifically identified in the Umatilla County Comprehensive Plan, there are several sites and vistas classified in the Comprehensive Plan Technical Report as “justifying limits to conflicting land uses” and, therefore, constitute key observation points. These sites and vistas include Hat Rock State Park, the Columbia River, and Cold Springs Reservoir. In addition to these sites, the following resources in the impact area have scenic value:

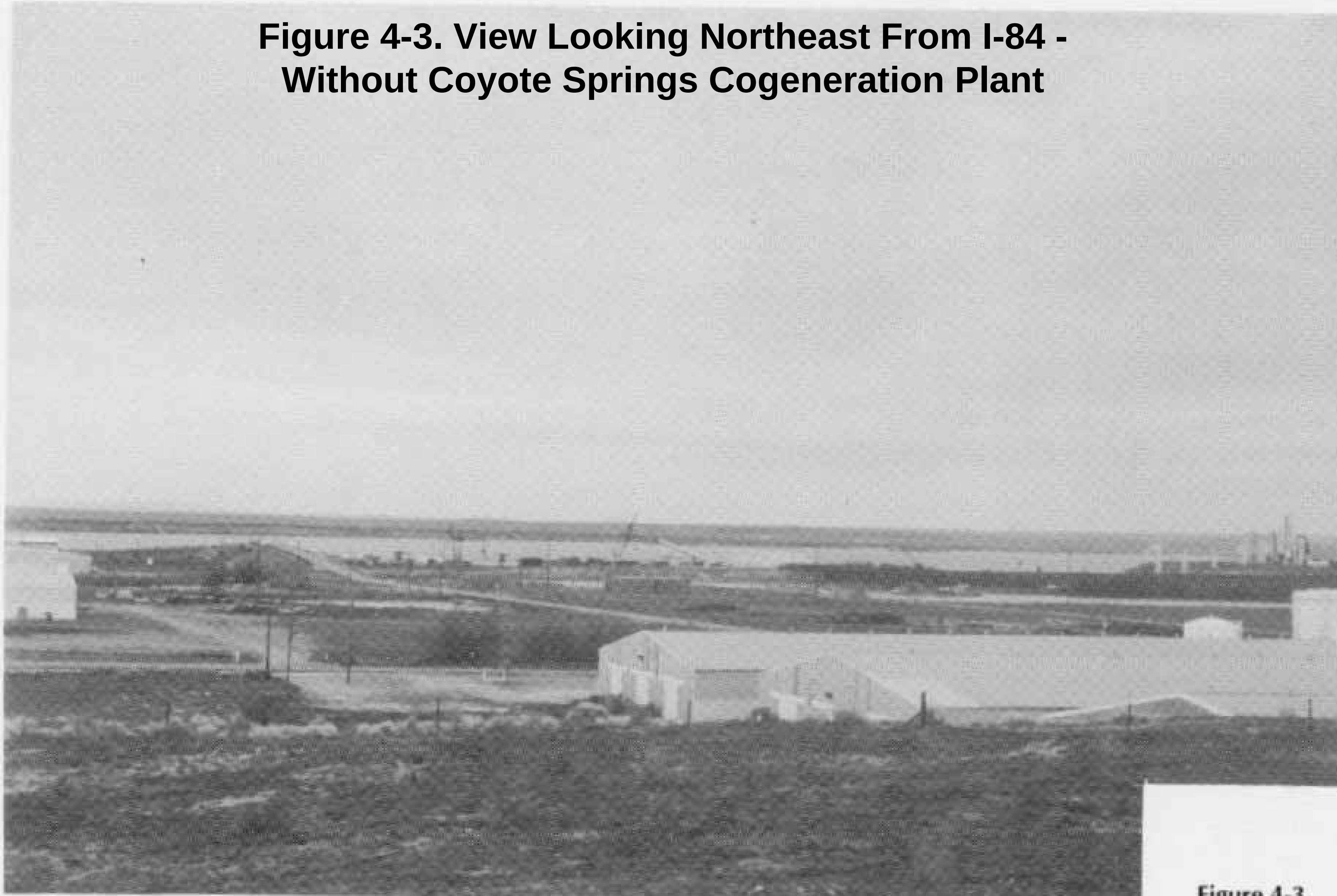
1. Umatilla County Scenic-Historic Road. This road, which is a collection of county roads, city streets, and state highways, follows the general course of early wagon roads between Umatilla and the Blue Mountains. The road is about 35 km (22 miles) east of the plant site.

2. McNary Lock and Dam. This structure on the Columbia River is at the western edge of Umatilla, approximately 32 km (20 miles) northeast of the plant site. (PGE, 1993.)

Gilliam County - There are no scenic or aesthetic resources identified in northeastern Gilliam County.

Viewer Exposure - Principal observation areas from which viewers could be exposed to visual impact are identified on Table 4-7. The locations of these areas are shown on Map 9. These areas were selected because of their designation as protected areas or designation in county or other land use plans as public recreation sites. Many of these visual observation areas are recreational sites where the visual experience is important.

Figure 4-3. View Looking Northeast From I-84 - Without Coyote Springs Cogeneration Plant



Coyote Springs Cogeneration Plant - Morrow County, Oregon

Figure 4-3
View Looking
Northeast from I-84

Figure 4-4. View Looking Northeast From I-84 - With Coyote Springs Cogeneration Plant

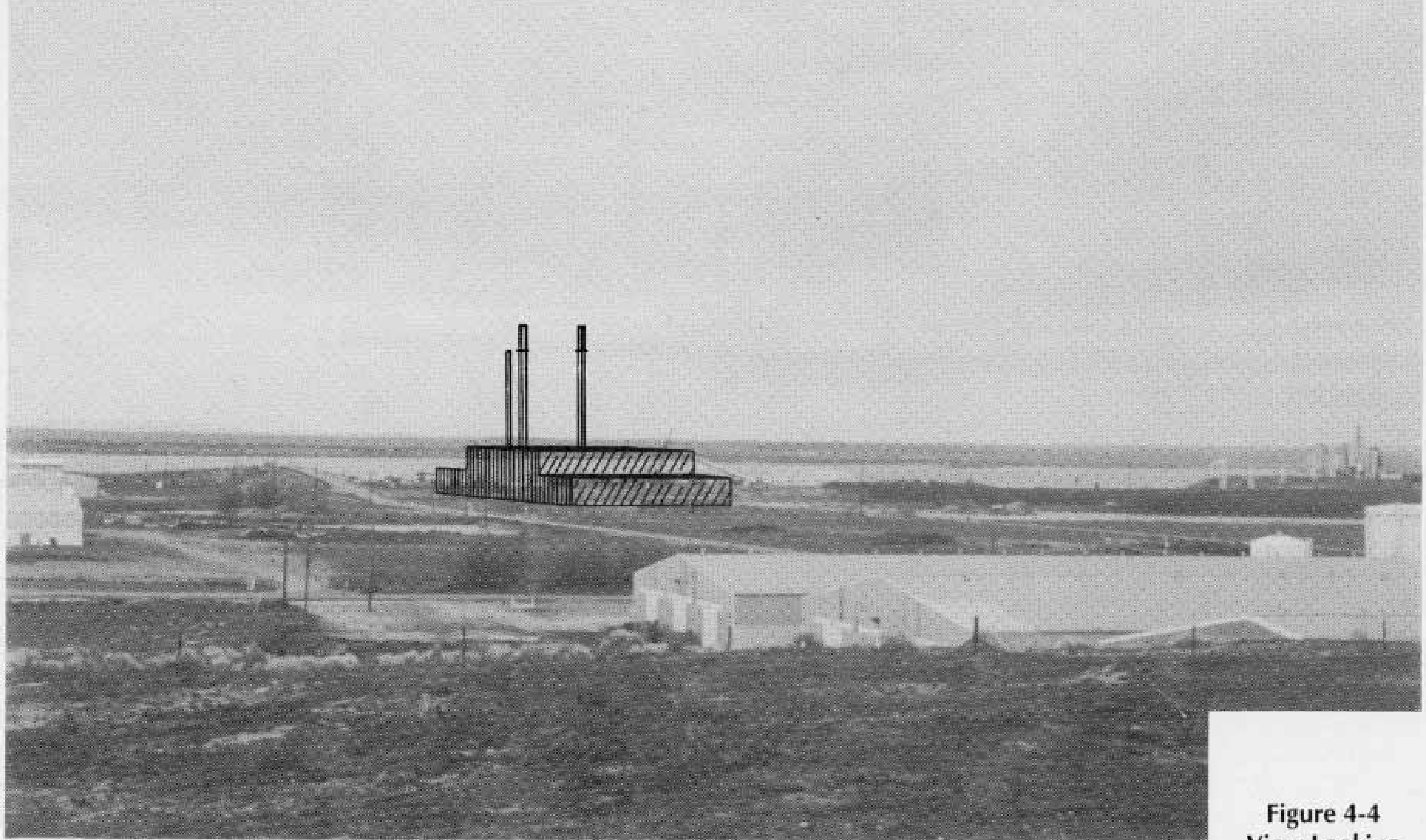


Figure 4-4
View Looking
Northeast from I-84
(With Simulation)

Coyote Springs Cogeneration Plant - Morrow County, Oregon

Figure 4-5. Distant View Looking Northeast From I-84 - Without Coyote Springs Cogeneration Plant

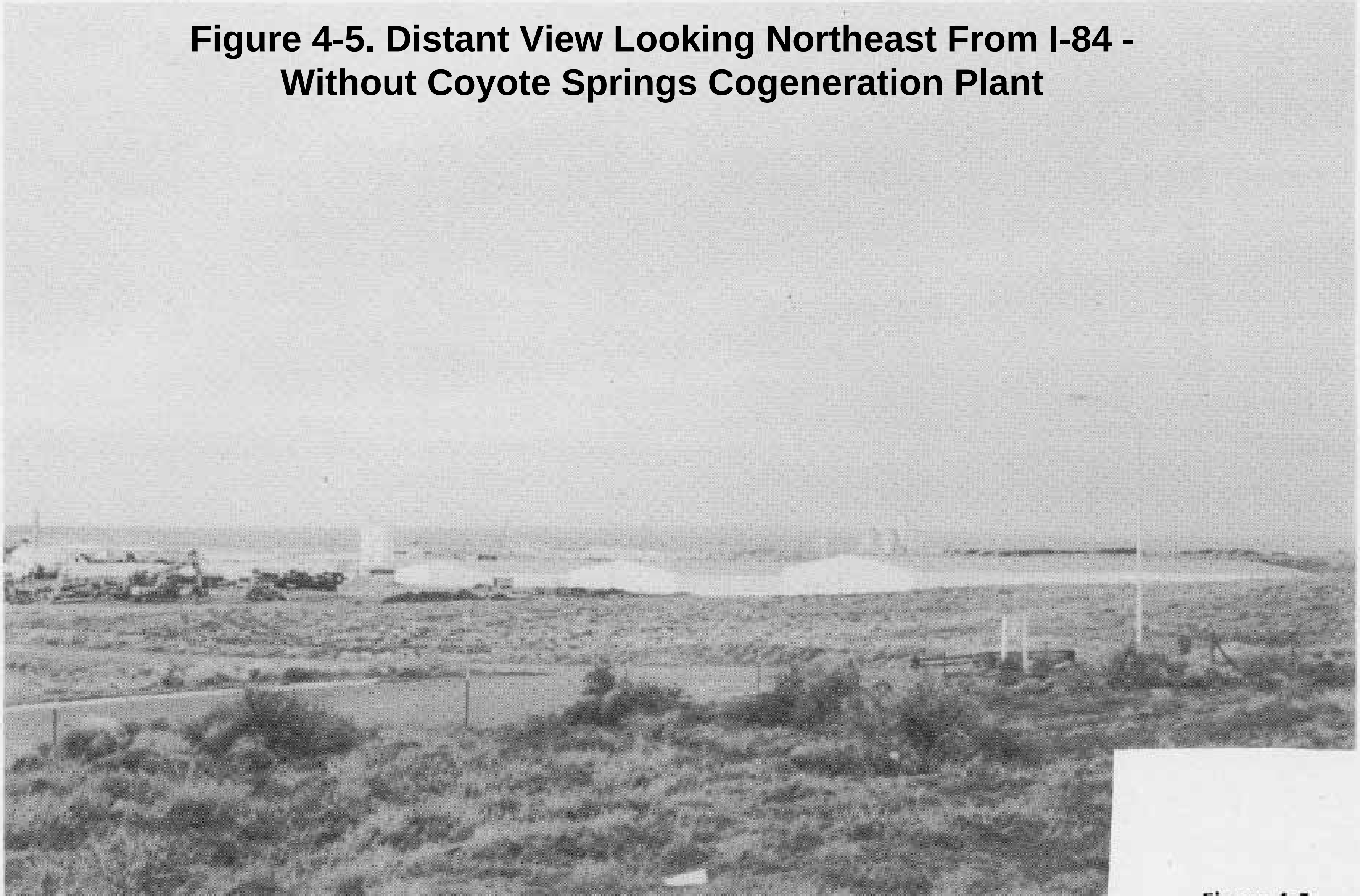


Figure 4-5
Distant View Looking Northeast from I-84 -

Coyote Springs Cogeneration Plant - Morrow County, Oregon

Figure 4-6. Distant View Looking Northeast From I-84 - With Coyote Springs Cogeneration Plant

Figure 4-6
Distant View Looking Northeast from I-84
(With Simulation)

Coyote Springs Cogeneration Plant - Morrow County, Oregon

Figure 4-7. Distant View Looking Northwest From I-84 - Without Coyote Springs Cogeneration Plant

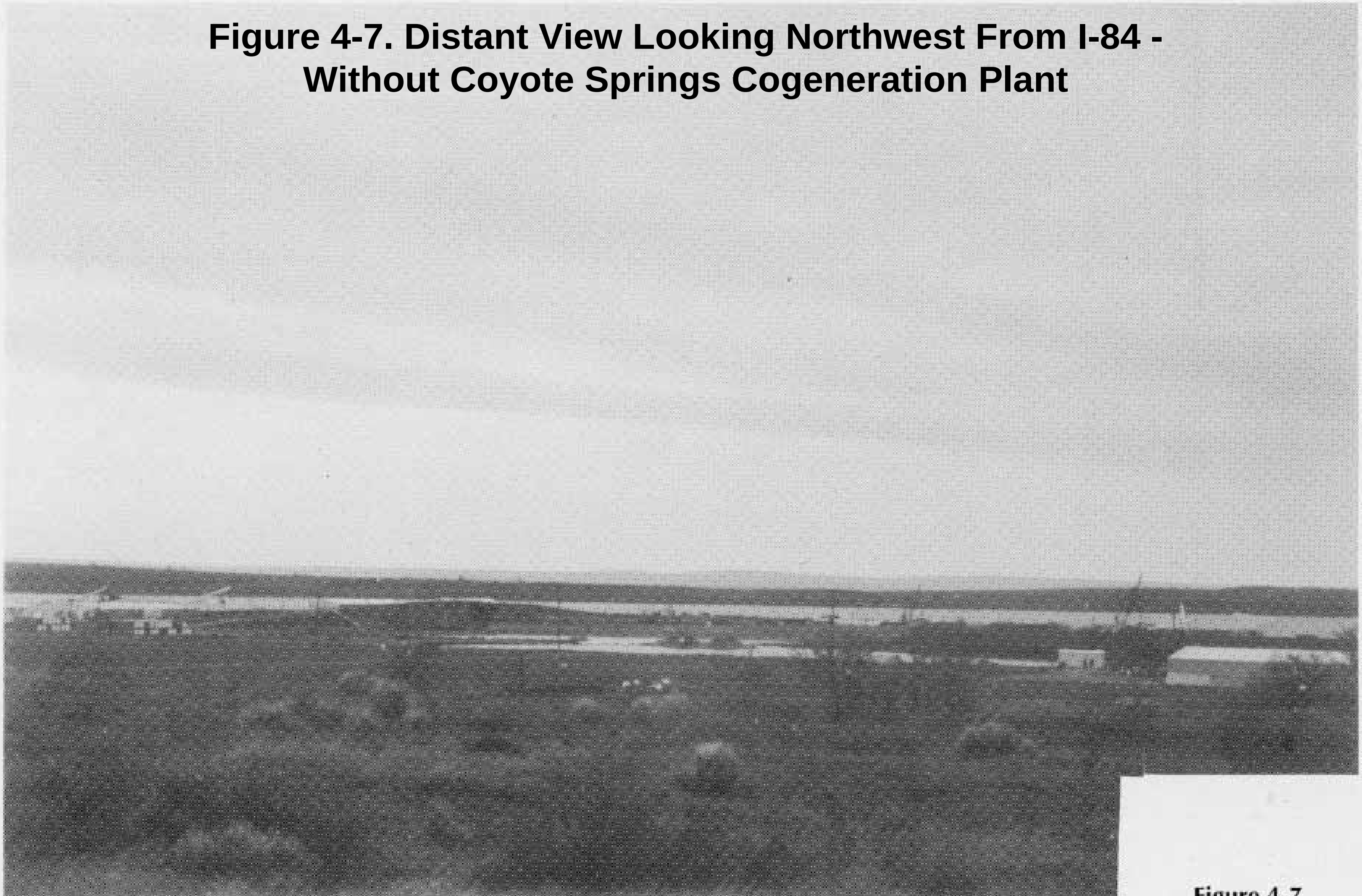


Figure 4-7
Distant View Looking Northwest from I-84

Coyote Springs Cogeneration Plant - Morrow County, Oregon

Figure 4-8. Distant View Looking Northwest From I-84 - With Coyote Springs Cogeneration Plant

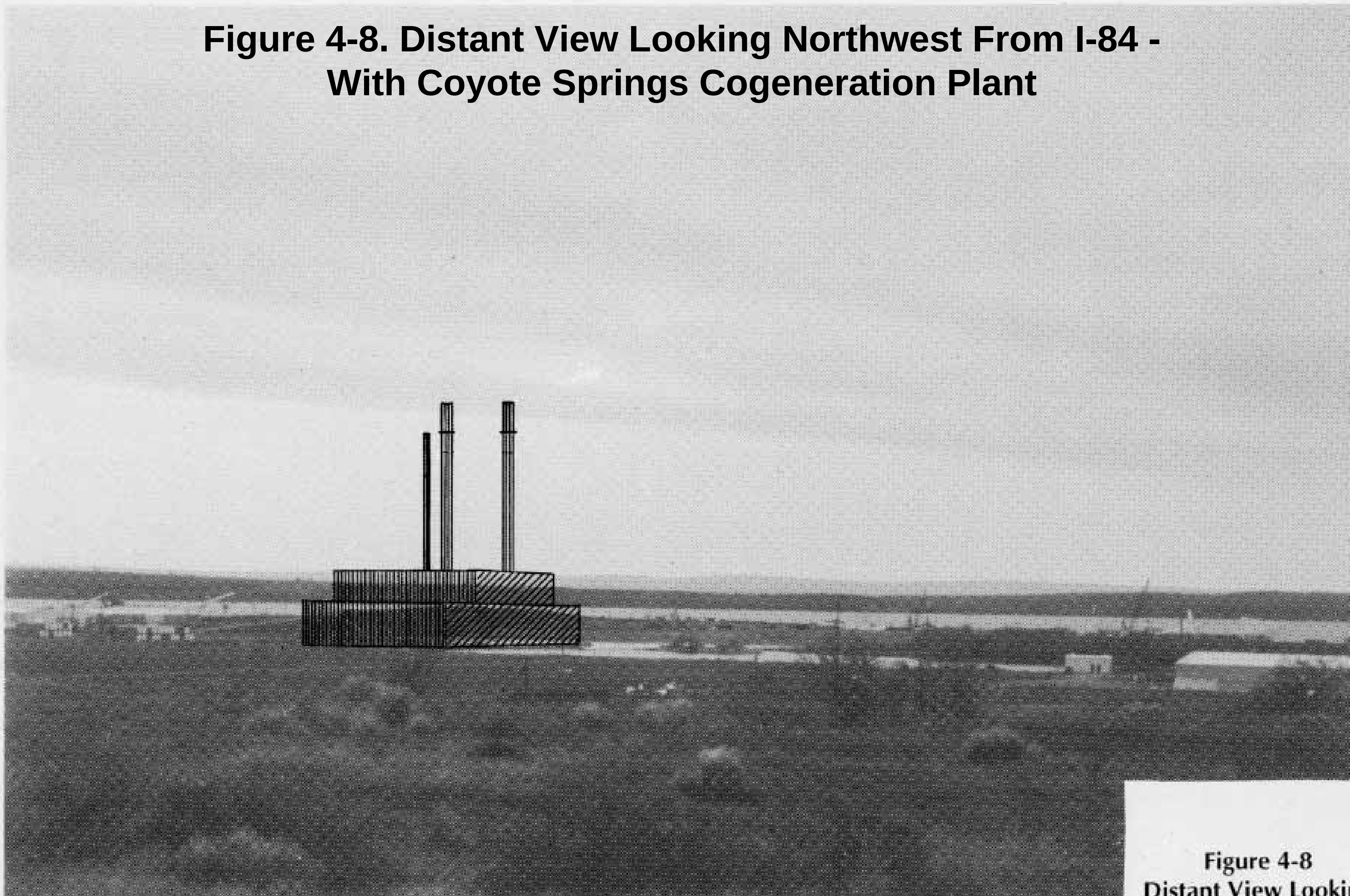


Figure 4-8
Distant View Looking Northwest from I-84
(With Simulation)

Coyote Springs Cogeneration Plant - Morrow County, Oregon

Table 4-7
Visual Observation Areas Near the Proposed Project

Viewer Observation Areas	Activity	Designation in Land Use Plan
Boardman Marina Park	Swimming, Sailboarding, Camping & Picnicking	Designated
Boardman Research Natural Area	Viewing, Research	Protected Area
Boardman Sailboard Beach	Sailboarding	Not Designated
Cold Springs Reservoir	Boating	Designated
Cold Springs National Wildlife Refuge	Hiking, Wildlife Viewing, Hunting & Boating	Protected Area
Horn Butte BLM ACEC	Wildlife Viewing & Hiking	BLM Designated and Protected Area
Coyote Springs State Wildlife Area	Wildlife Viewing & Hunting	Not Designated but Protected Area
Hat Rock State Park	Picnicking, Hiking, Fish Viewing	Designated and Protected Area
I-84 Rest Stops (east/west bound)	Picnicking, Resting	Not Designated
Irrigon Marina Park	Boat Launching, Boating	Not Designated
Irrigon State Wildlife Area	Wildlife Viewing & Hunting	Not Designated or Protected
Lake Wallula	Boating	Designated
Lake Umatilla	Boating	Designated
Lindsay Grassland	Viewing	Designated
McNary Lock and Dam	Viewing	Designated
Messner Pond	Fishing, Boating, Wildlife Viewing	Not Designated
Oregon Trail BLM ACEC (Bucks Corner)	Viewing, Hiking & Historic Values	BLM Designated and Protected Area
Power City Wildlife Area	Viewing & Hunting	Not Designated or Protected
Riverside High School	Tennis, Baseball, Softball, Football, Track & Jogging	Not Designated
Motorists on I-84	Destination Travel	Not Designated
Umatilla County Scenic-Historic Road	Scenic Travel & Viewing	Designated
Umatilla National Wildlife Refuge	Hiking, Horseback Riding, Hunting, Boating & Wildlife Viewing	Protected Area
Willow Creek Corps of Engineers Boat Ramp/Recreation Area	Boating, Fishing, Camping	Designated
Willow Creek State Wildlife Area	Wildlife Viewing	Protected Area
Wilson's Willow Run Golf Course	Golfing	Not Designated

4.1.7 Cultural Resources

Historic, cultural, and archeological resources near the project site that might be affected by proposed project facilities were evaluated by the Museum of Natural History, Eugene, Oregon under contract to PGE. PGE hired Archaeological Investigations Northwest of Portland, Oregon to conduct an intensive cultural resource survey for the Coyote Springs Plant site and the transmission line route. Findings are reported in Exhibit T of PGE's *Application for Site Certificate.* PGT's Resource Report for FERC reports on cultural resources along the natural gas pipeline. A summary of these studies follows.

Cultural Resources Background - The project lies within the Southern Columbia Plateau culture area, which contains prehistoric sites dating from 11,000 to 200 years B.P. The earliest prehistoric period dates from 11,000 to 3,500 B.P. and is distinguished from later periods by the absence of permanent pit house dwellings. The later prehistoric period, dating from 3,500 to 200 B.P., is characterized by semi-subterranean houses and an increased reliance on fish.

Most cultural resource work in the Columbia Plateau is related to hydroelectric power projects in the Columbia River Basin. Important sites in the project vicinity include Five Mile Rapids, Wildcat Canyon, and Umatilla Rapids. The Five Mile Rapids site contains evidence of over 10,000 years of human occupation. At the time of historic contact, it was the greatest trading center and fishing area in the Northwest.

Wildcat Canyon contains a cultural sequence of comparable length, with the earliest human occupation dating to 9,000 years B.P. The most intense occupation at Wildcat Canyon was between 2,500 and 1,000 B.P. The artifact inventory from this period includes a variety of tools relating to food processing and gathering, as well as tools for making wood, leather, and textile items.

When the Lewis and Clark Expedition passed by the Umatilla Rapids site in 1805, they noted it was a village with "a great number of lodges." This important site at the confluence of the Columbia and Umatilla rivers was occupied before 7,000 B.P., with occupation extending into historic times. The remains of over 30 prehistoric houses have been excavated at the site, and over 230 burials were identified in a cemetery area.

At the time of historic contact, the project area was inhabited by Umatilla Indians. Although no single ethnography exists on the Umatilla, living patterns of these people can be reconstructed through information found in journals of trappers and early explorers. Lewis and Clark noted 34 villages between the Snake River and the Columbia River channel. The most important resource to the Umatilla was the fish species of the Columbia River.

The first commercial enterprises in the area were fur-trading companies established in the early 1810s. Umatilla, the largest town in the area, was founded during the gold rush of 1860. Umatilla served as a supply center for the region during the mining boom. As the mining-based economy slowed in the 1870s, agriculture became increasingly important and was fueled by completion of the Central Pacific Railroad. Wheat and livestock were a focus in the area's early agricultural period. As irrigation projects were completed in the early 1900s, large tracts of land were devoted to growing peaches and melons. Today, agriculture still is a significant portion of the area's economy.

Review of Existing Information - Information on existing historic, archeological, and cultural resources in the vicinity of the proposed project was obtained through consultation with the ***State of Oregon Historic Preservation Office (SHPO)*** and a review of available literature. Known historic, archeological, and cultural resources in the vicinity include the following resources.

Oregon National Historic Trail - The Oregon Trail route is within 24 km (15 miles) of the main plant site. Much of the Oregon Trail has been obliterated by cultivation and other land development activities, but the trail is evident near Immigrant Road, 24 km (15 miles) south of the plant site. The SHPO and National Park Service have expressed concern over protection and preservation of remaining trail sections.

Carty Reservoir Prehistoric Sites - Two prehistoric sites were found during 1973-75 in the area now occupied by Carty Reservoir near the Boardman Coal-Fired Plant. Site 35 MW 15, the “Fourmile Canyon Site,” and Site 35 MW 18, the “Canyon Four Site,” were both extensive stone working/tool making sites dating from the period 6,000 to 9,000 B.P. Three other less extensive sites containing lithic flakes and fragments were also found in the area (Sites 35 MW 16, 35 MW 17, and 35 MW 19).

West Extension Irrigation Canal - The West Extension Irrigation Canal is within about 2.4 km (1.5 miles) of the main cogeneration plant site. The canal was built in 1913 and is still used. It is considered a historic engineered structure by the U.S. Bureau of Reclamation.

Lewis and Clark Historical Marker - A historical marker along Highway 730 in Irrigon represents a stopover made by the Lewis and Clark Expedition on October 19, 1805.

Columbia River South Shoreline Lithic Scatters - Elongated areas containing scattered lithic flakes and fragments are along the south shoreline of the Columbia River in the project's vicinity. These include areas just upstream and downstream of the inlet to Messner Pond about 0.8 km (0.5 mile) from the plant (Sites 35 MW 12 and 35 MW 13).

Other Nearby ***Isolates*** in the Vicinity - Several other small isolated and detached sites (isolates) containing prehistoric remnants have been identified in the vicinity (PGE, 1993). These include two areas about 2.4 km (1.5 miles) northeast of the main plant site (35 MW 47 and 35 MW 48), two areas between Boardman and Irrigon (35 MW 45 and 35 MW 46), and one area 3.2 km (2 miles) east of Irrigon (35 MW 12).

Other Previous Surveys in the Vicinity - Several other archeological surveys have been conducted in the vicinity. Most produced no significant or substantive historic or archeological evidence. These include:

PGT Pipeline Surveys - Extensive surveys were done along the existing PGT pipeline route in 1990. No prehistoric sites or isolates were found in the project area during these surveys. No historic sites or isolates were found, with the exception of the Oregon Trail, which crosses the existing PGT pipeline just northwest of Ione.

Northwest Pipeline Surveys - Extensive surveys were conducted during 1990-91 along the proposed route for the Northwest Pipeline Expansion Project, including the segment recently constructed near Umatilla. Four historical sites along the pipeline corridor were trash scatters determined not to be significant. In addition, historic irrigation systems were determined to be eligible for the National Register of Historic Places. Treatment plans were developed and implemented to protect the historical significance of the 12 canal crossings during construction of the natural gas pipeline. No prehistoric sites or isolates were found during these surveys.

Port of Morrow Interchange Surveys - An on-site archeological reconnaissance survey was done by the Oregon Department of Transportation (ODOT) in a limited area surrounding the Port of Morrow/Interstate 84 interchange just south of the proposed plant site. No prehistoric or historic sites, or isolates were found during this survey.

Boardman Bombing Range Survey - An on-site archeological reconnaissance survey was conducted in a limited area on the Boardman Bombing Range near the Boardman coal-fired plant. Only one prehistoric isolate was found during this survey.

On-Site Surveys - On-site surveys to assess the possible presence of historical, archeological, and cultural resources were conducted by Archaeological Investigations Northwest of Portland, Oregon. Surveys were done during April and May 1993. The surveys were conducted by a team of four archaeologists walking in unison at 30 m (100 ft.) intervals. The surveys initially checked for presence of surface materials. One projectile point, a core and a possible chopper were found on the slope of the railroad fill on the north border of the plant site. No other resources were found. Subsurface testing was not recommended by the archaeologists based on the surface reconnaissance. PGE submitted survey results to SHPO and EFSC. The survey team included Dana Schneder, a cultural resource technician from the Confederated Tribes of the Umatilla.

National Park Service - The National Park Service was contacted about any concerns relevant to their interest within the impact area. The National Park Service's primary concern was the Oregon Trail. The proposed gas pipeline and its impact will be reported in an environmental assessment issued by the FERC in fall 1994. The pipeline would cross the Oregon Trail in a location that has been previously disturbed by agriculture that has not been evaluated to determine its National Register eligibility.

4.1.8 Protected Areas

In Oregon, siting energy facilities is regulated by EFSC. One aspect of this regulation is to prohibit energy facilities from being sited within special land use areas called Protected Resources. Oregon Administrative Rules, Chapter 345, Division 22, Rule 040 (1) lists Protected Resources. In addition, design, construction and operation of a facility near these areas cannot significantly impact these areas. The proposed facility is near the Protected Resources discussed below and shown on Map 10.

The Umatilla National Wildlife Refuge is approximately 3.5 km (2.2 miles) northeast of the proposed plant site. The refuge occupies a 32-km (20-mile) portion of the mid-Columbia River and adjacent uplands, totaling 9250 ha (35 sq. miles). About half of the acreage is made up of the flowing Columbia River. The refuge is an important wildlife and recreational area. A wide variety of habitats enable the refuge to support a wide diversity of wildlife, including bald eagle, peregrine falcon, long-billed curlew, white pelican, osprey, and burrowing owl. Frequently seen mammals are coyote, badger, mule deer, beaver, and river otter. The Columbia River and its backwaters serve as migration, feeding, spawning, and rearing areas for a variety of fish.

The Coyote Springs Wildlife Area is 65 ha (160 acres) located in Morrow County north of I-84 near the junction of I-84 with U. S. Highway 730, approximately 3.2 km (2 miles) from the proposed plant site. It is a waterfowl hunting and nesting area.

Other protected areas within a 32-km (20-mile) radius of the proposed facility are: two state fish hatcheries between Irrigon and Umatilla; Hat Rock State Park; Willow Creek, Irrigon, and Power City Wildlife Areas; Boardman Research Natural Area; Lindsay Grassland; and two BLM areas of Critical Concern (part of the Oregon National Historic Trail and Horn Butte).

The City of Boardman is currently developing a wellhead protection ordinance to regulate land use inside the water capture zone for its Ranney collector well(s). Although the Coyote Springs Plant site is just outside the eastern boundary of the capture zone, the City, the Port of Morrow and PGE have agreed to discuss plant design and waste handling procedures relevant to wellhead protection.

4.2 Coyote Springs Natural Gas Pipeline Extension

PGT's Coyote Springs Extension Pipeline passes through areas with largely the same characteristics as the Coyote Springs Cogeneration Project. The preferred route of the pipeline is shown on the resource maps.

4.2.1 Land Use and Community Character

The predominant land use along the 29.8-km (18.5-mile) pipeline route is an existing joint right-of-way used by an electric transmission line and a county road. Located between the easterly fenceline of the U.S. Naval Weapons System Training Facility (known as the Boardman

Bombing Range) and Morrow County's Bombing Range Road, the pipeline route does not cross land used for any other purpose between the 4-km (2.5-mile) and 24-km (15-mile) stations. No industrial uses are crossed by the route, although several processing plants and quarrying operations are next to the route. No residences or commercial activities are located within 15 m (50 ft.) of the pipeline impact area.

The route crosses 11 roads: Wilson Road, County Road M817, I-84, Ripee Road, and seven unnamed gravel roads. Bombing Range Road initially derived its name in connection with the Naval Weapons System Training Facility located to the west. While the Navy still conducts training at the facility, no explosives are used. In addition to the roads, the route would cross one canal (West Extension Irrigation Canal) and a BPA electric transmission line. The route also runs parallel to the proposed BPA line from the cogeneration plant where the line is in the Port of Morrow utility corridor next to a water line and two sewer pipelines.

In the Port of Morrow Industrial Park, additional planned industrial development and roadway expansion is expected to occur. However, since the proposed route is within the utility corridor, the route will not affect any of these plans. No other planned development has been identified by the Morrow County Planning Department on lands crossed by the proposed pipeline.

Messner Pond Wildlife Area is east of the site of the proposed cogeneration plant, and north of the proposed pipeline route. The Oregon Trail is crossed by the pipeline route at station 6-km (3.7-mile), where the trail enters the Boardman Bombing Range. Recreational and hiking use of the trail is minimal. There are no other recreation facilities or opportunities for recreation crossed by the pipeline route. For further details on land uses in the vicinity of the project, see Section 4.1.1.

4.2.2 Natural Resources

Geology

See Section 4.1.2 for a description of area geology, soils, and water resources.

Seismicity - The potential for seismic hazards is considered to be low because the proposed route does not cross any mapped faults.

Soil Liquefaction - The potential for soil liquefaction is considered to be low because the proposed route crosses geologic units of an age considered to have low to very low liquefaction susceptibility.

Slope Instability - The terrain crossed by the route is generally flat or rolling with little slope. Landslides are not present in the area, so the potential for slope failure is considered to be low.

Subsidence - Subsidence as a result of groundwater extraction in the vicinity of the proposed route is not known to have occurred, and the potential for such subsidence is considered to be very low.

Stream Bottom Scour and Bank Erosion - The proposed route would cross only minor, intermittent streams and one irrigation canal. Significant scour or erosion of these streams at the crossings is not expected because of the low annual precipitation and resulting low intermittent flows. The canal will be crossed 1.5 m (5 ft.) below its concrete bottom.

Mineral Resources

The Mineral Resources Map of Oregon, Preliminary Geothermal Resource Map of Oregon, and data on existing, local mine permits were reviewed. The proposed route would not cross any areas identified in these references as having currently or potentially exploitable mineral resources.

Air Quality

See Section 4.1.2 for a description of area air quality.

Vegetation

Most of the natural vegetation of the Coyote Springs area has been greatly disturbed by dryland and irrigated agriculture. Throughout the 29.8-km (18.5 mile) pipeline route, agriculture and utility line and roadway maintenance operations have eliminated all parcels of native vegetation. Introduced grasses tend to dominate all areas. The Lindsay Grassland Preserve is 3.9 km (2.4 miles) southwest of the proposed route and contains one of three known remnants of the dry, deep loessial soil bluebunch wheatgrass, Sandberg's bluegrass palouse. The Preserve also contains small, but high-quality examples of three other Columbia Basin shrubland and grassland communities.

In May and July 1993, plant field surveys along the east side of the Bombing Range Road right-of-way were conducted. No undisturbed native vegetation communities were observed during the survey. In places, bitterbrush and gray and green rabbitbrush, respectively, were locally abundant with a grass understory. Areas remaining uncultivated were often grazed and almost always included invasive species, particularly cheatgrass. In scattered areas, however, some bunchgrasses, bluegrasses, Indian ricegrass, and needle-and-thread grass are present but never in large amounts. The area showed recent disking or other site disturbance. This was particularly common under the power lines. Site disturbance has opened the way for cheatgrass, tansy mustard, Russian thistle, tumble mustard, fiddleneck, blue mustard, filaree, and other species to invade and become dominant.

A focus of the plant surveys was determining if Federally or state protected plants were present. Three of these species: Thompson's sandwort (Arenaria franklinii var. tompsonii), Lawrence's milkvetch (Astragalus collinus var. laurentii), and Columbia cress (Rorippa columbiae) listed as possibly occurring in the area, were not found during the surveys.

In the spring of 1994, plant surveys will be repeated because part of the pipeline route has been shifted to the west side of Bombing Range Road.

Fish and Wildlife

The proposed pipeline route does not cross any wilderness study, research, natural, wildlife, or other similarly designated areas. However, many wildlife species are found within the project vicinity. Several designated wildlife refuges and other natural areas are near the terminus of the pipeline route. See Section 4.1.2, Fish and Wildlife. No fish-bearing streams are crossed by the pipeline route.

As a result of human activities, the natural plant communities and wildlife habitats are now dominated by vegetation that is characteristic of disturbed areas, with grasses prevalent in most areas of the route. In 1993, wildlife surveys were conducted to identify any significant existing wildlife resources. The scope of these surveys included wildlife and wildlife habitats, and special status and threatened and endangered species. Surveys were conducted along the pipeline route at varying distances from the centerline, ranging from 91 m (300 ft.) to 800 m (1/2 mile).

Six protected species were observed during the wildlife surveys: golden eagle, ferruginous hawk, Swainson's hawk, long-billed curlew, burrowing owl, and grasshopper sparrow. The other nine protected species were not found during the surveys. The results of the surveys are as follows:

Spotted frog - No spotted frogs were located during the surveys.

Bald eagle - No bald eagles were observed during field surveys. No bald eagle nesting or feeding habitat is within the pipeline route.

Swainson's hawk - Swainson's hawks were observed many times perched, in flight, or feeding along the pipeline route. No Swainson's hawk nest sites were found within 800 m (1/2 mile) of the pipeline route.

Ferruginous hawk - Ferruginous hawks were observed soaring and hunting in the general vicinity of the pipeline route during April. They were not observed during May. No ferruginous hawk nesting sites were found within 805 m (1/2 mile) of the pipeline route.

Golden eagle - Golden eagles were observed on one occasion, soaring approximately 1.6 km (1 mile) west of the pipeline route. No golden eagle nesting habitat was found within 800 m (1/2 mile) of the pipeline route.

American peregrine falcon - No peregrine falcons were observed during the field surveys. No peregrine falcon nesting habitat is within 800 m (1/2 mile) of the pipeline route.

Prairie falcon - No prairie falcons were observed during the field surveys. No prairie falcon nesting habitat is within 800 m (1/2 mile) of the pipeline route.

Greater sandhill crane - No sandhill cranes were observed during the field surveys.

Long-billed curlew - Long-billed curlews were found in the general area and along the pipeline route. Curlews were observed in both courtship and territorial flights, and emitting alarm and distress calls during short circling flights near observers. Both behaviors indicated active nesting territories. Nesting territories were found at fairly regular intervals along Bombing Range Road west of the Naval Weapons System Testing Ground (Boardman Bombing Range) fence line.

Ten curlew territories were found within 152 m (500 ft.) of the pipeline route. Territorial behaviors indicating active nesting were observed at these locations, which occur between stations 9.0-km (5.6-mile) and 21.7-km (13.5-mile). In the spring of 1994, curlew surveys were repeated because part of the pipeline route had been shifted to the west side of Bombing Range Road.

Burrowing owl - Burrowing owls were seen twice along the pipeline route. Both observations were of perched individuals. Nesting was not confirmed. No burrowing owl nesting areas were found within 30 m (100 ft.) of the route centerline. In the spring of 1994, burrowing owl surveys were repeated because part of the pipeline route had been shifted to the west side of Bombing Range Road.

Loggerhead shrike - No loggerhead shrikes were observed during the field surveys.

Grasshopper sparrow - Nine grasshopper sparrows were observed singing from perches near the pipeline route. Singing males indicate active territories and probable nesting. All observations occurred in grazed grassland or shrub-steppe habitats. Five individuals were observed within 152 m (500 ft.) of the pipeline route.

In the spring of 1994, grasshopper sparrow surveys were repeated because part of the pipeline route had been shifted to the west side of Bombing Range Road.

Pacific Western big-eared bat - No big-eared bats were observed during the field surveys. No bat roosts were found within 800 m (1/2 mile) of the pipeline route.

Pygmy rabbit - No pygmy rabbits were found during the field surveys. No preferred habitat for pygmy rabbit occurs within the pipeline route.

Washington ground squirrel - A few Washington ground squirrels were observed along the pipeline route during the field surveys. Rodent burrows of appropriate size for Washington ground squirrels are common in grazed grassland and shrub-steppe habitats.

In the spring of 1994, Washington ground squirrel surveys were repeated because part of the pipeline route had been shifted to the west side of Bombing Range Road.

Wetlands

Physical conditions in the project area tend to limit the extent of wetlands. Soils are sandy, generally originating as alluvial deposits, and having low water-holding capacity. The local dry climate limits surface and groundwater availability. Wetlands were identified initially from USFWS National Wetland Inventory Maps. In May 1993, a field survey to check and delineate wetlands was completed. All NWI mapped wetlands were found to contain fill within the 30-m (100-ft.) wide pipeline survey area.

One possible jurisdictional wetland was found along the proposed route. The location is a palustrine emergent wetland. The source of water to this area is runoff from surrounding irrigated cropland. As such, this wetland is considered atypical and would not normally fall under the regulatory jurisdiction of the Corps of Engineers.

In the spring or summer of 1994, a wetland survey was repeated because part of the pipeline route had been shifted to the west side of Bombing Range Road.

4.2.3 Socioeconomics and Public Services

See Section 4.1.1, Socioeconomics and Public Services for a description of the local area and the essential local government services available to area residents.

4.2.4 Public Health and Safety

The pipeline will be constructed and operated under U.S. Department of Transportation regulations and FERC guidelines.

4.2.5 Noise

Because of the remote location of most of the proposed pipeline route, ambient noise levels in the project area are expected to be low. Only one sensitive noise receptor, a residence, is located in the vicinity of the proposed route, about 60 m (200 ft.) from the boundary of the working limits. Average L_{dn} levels (day-night sound levels) in rural areas typically range from 35 to 40 dBA. Where the pipeline would cross I-84, ambient levels would be expected to be 65 to 85 dBA L_{dn}. At the terminus of the pipeline route in the Port of Morrow Industrial Park, levels would range from 60 to 70 dBA L_{dn}.

4.2.6 Visual and Aesthetic Resources

The predominant natural landscape feature of the area traversed by the proposed pipeline is a continuous cover of perennial grasses, with little variation in color or texture. Scattered groupings of small deciduous trees are found in a few locations. The visual landscape character of the study area is flat to gently rolling, with low slope gradients and little distinctive character. Because of low growth habit and sparseness of existing vegetation and terrain conditions, views often exceed 1.6 km (1 mile). There are no Federally designated lands or visual resources within the study area. There are no areas designated as "significant" or "important" scenic resource values in the Morrow County Comprehensive Plan (1986).

4.2.7 Cultural Resources

See Section 4.1.7, Cultural Resources for regional and local background on prehistoric and historic resources in the area.

In 1993 and 1994, intensive cultural resource surveys were completed along the proposed pipeline route. No prehistoric sites were found. No significant historic site was found, although the route does cross a segment of the Oregon Trail. A field review of the trail crossing concluded that no existing trace of the trail exist at that location due to previous agricultural ground-disturbing activities.

4.2.8 Protected Areas

See Section 4.1.8., Protected Areas, for a description of these special land use areas.

To Chapter 5

5. Environmental Consequences

This section describes the impacts of the proposed action and alternatives to the proposed action on the environment. Most impacts are from the proposed cogeneration plant.

Impacts are organized by proposed action, that is, impacts to resources from the cogeneration plant are first, followed by impacts from the transmission line and the natural gas line. Impact matrices are provided at the beginning of these impact discussions and provide an overview of predicted impacts. Impact narratives follow the matrices and provide more detailed explanations of predicted environmental consequences.

Environmental Impact Definitions - Analysts evaluated the proposed action and alternatives to determine if these actions would cause significant adverse change to present environmental conditions. A significant adverse change to present environmental conditions would satisfy one or all of these outcomes:

1. Create an effect that cannot be mitigated.
2. Significantly reduce the quantity or quality of a regionally or nationally significant resource.
3. Pose a clear risk to human health or safety.
4. Affect the long-term productivity of the affected environment.
5. Irreversibly or irretrievably damage the environment.
6. Consume significant quantities of non-renewable natural resources.

Analysts considered short-term and long-term impacts. Impacts that do not meet the definitions above, or that can be mitigated, are not considered significant.

5.1 Impacts of the Proposed Action

5.1.1 Coyote Springs Cogeneration Plant Impacts

Impacts predicted to occur from the cogeneration plant are summarized in Table 5-1. Narrative descriptions of predicted impacts are provided below.

Land Use Impacts - Cogeneration Plant

Construction of the proposed power plant would alter the land use at the proposed site from gravel mining to an industrial use. The proposed project has been sited in an industrial park and is appropriately zoned for the proposed use. Power-generating facilities are permitted uses in the Port Industrial Zone, under the Morrow County Zoning Ordinance, MC-C-2 Section 3.073 (1)(L). A land use compatibility statement for the proposed use was approved by the County of Morrow

and the City of Boardman in September 1991. The City of Boardman submitted a letter commenting on the DEIS that states that the project is in complete compliance with zoning and the City's Comprehensive Plan. Furthermore, the proposed project would be surrounded by other industrially zoned parcels. No land use conflicts or incompatibilities with existing or future industrial land uses are anticipated.

Transportation Impacts - Cogeneration Plant

Possible train derailments adjacent to the proposed project site are unlikely to impact any of the proposed facilities (Egan, 1993). With a permanent work force of 20-30 full-time employees, the proposed project would generate approximately 40-60 vehicle trips per day in the local area. Construction vehicles and equipment used in the construction of the proposed project could damage existing roads in the local area.

Mitigation - Road improvements necessary to provide access to the proposed facility could be financed and constructed by PGE in accordance with the Morrow County Street Classification policies and the County's Transportation Policy #10. Prior to any construction activities taking place, PGE could place sufficient funds in escrow to return any roads damaged during construction to their preconstruction condition.

Recreational Impacts - Cogeneration Plant

Recreational facilities and opportunities in Morrow County would not change as a result of this project (PGE, 1993).

Construction noise could cause short-term impacts; noise could increase to 68 dBA L_{max} for 4 hours (PGE, 1993). Temporary disturbance of recreational opportunities at Messner Pond may occur during plant construction due to increased noise levels. Plans to develop recreational trails and/or other facilities would not be impacted by developing the power plant near the west side of Messner Pond. No disturbance of recreational opportunities at Messner Pond during facility operation is expected, so no mitigation is needed.

Primary recreational facilities and opportunities within the 8-km (5-mile) impact area are at the Umatilla National Wildlife Refuge, Boardman Marina Park, Coyote Springs Wildlife Area, and Riverside High School. These facilities would not be impacted by the proposed plant.

The visual impact discussion describes visual impacts to recreational areas and activities.

Impact Table - Coyote Springs Cogeneration Plant

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
WATER				
Resulting from Construction Activities				
Messner Pond	Unlikely	None	NPDES requirements	DEQ 1200 C
Columbia River	Unlikely	None	NPDES requirements	DEQ 1200 C
Unnamed Irrigation Pond	Certain	Moderate	NPDES requirements	DEQ 1200 C
Resulting from Facility Operation				
Shallow aquifer water quality	Unlikely	Slight	None	Water Rights Permit
Degradation of water quality	Unlikely	Slight	City of Boardman's sewa treatment facility	None
Deep aquifer lowering of w table	Possible	Slight	None	Water Resourc Permit
Spills of fuel or other hazardous materials	Unlikely	Major	NPDES requirements	None
Fisheries impacts	None	None	NPDES requirements	DEQ 1200 C
Wetlands/Messner Pond	Unlikely	Slight	NPDES requirements	DEQ 1200 C
Boardman sewer facilities	Likely	Unknown	None	None
VEGETATION				
Habitat disturbance	None	None	Recontouring and revegetation	None
Sensitive plant species	None	None	None	None
WILDLIFE				
Fauna				
Mortality of individuals	Unlikely	Unlikely	None	None
Temporary displacement	Unlikely	Unlikely	Place fence around swall nests and plant trees o west shore of Messner Po	None
Stress in crucial life cycle times	Unlikely	Unlikely	None	None
Wildlife Habitat				
Wildlife habitat impact sl steppe	Minimal	Unlikely	None	None
FISH				
Mortality/displacement	Unlikely	None	None	None
SPECIAL STATUS SPECIES				
None found in project area	None	None	None	None

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
THREATENED AND ENDANGERED SPECIES (Federally Listed)				
Plants				
None found in project area	None	None	None	None
Wildlife				
Peregrine falcon	Unlikely	None	None	None
Bald eagle	Unlikely	None	None	None
Fish				
Salmon River fall chinool salmon	Unlikely	None	None	None
Salmon River spring/summ chinook salmon	Unlikely	None	None	None
Salmon River sockeye salmon	Unlikely	None	None	None
GEOLOGIC HAZARDS				
Seismic Hazards (Possibil that ground shaking, fault c soil liquefaction, or seisn induced waves and floodin could affect the integrity c facility.)	Possible	Local area	Construct facilities accor to the Uniform Building Code, and the appropriate importance factor for essential and hazardous facilities.	Building Perm
SOIL				
Wind erosion due to remova vegetation	Slight	Localized short-term	NPDES Requirements	DEQ 1200 C
Water erosion due to remo of vegetation.	Slight	Localized short-term	NPDES Requirements	DEQ 1200 C anc Plot Plan Revi Permit
LAND USE				
Land use will change fron vacant to industrial.	Certain	Localized	None	None
Plant will generate approximately 50 vehicle each day.	Likely	Localized	Project proponent could f necessary road improvements.	None
Construction vehicles ma damage local roads	Unlikely	Project Area	Project proponent could f any repairs necessary t repair roads to preconstruction conditi	None
CULTURAL RESOURCES				
Historic, cultural and archeological resources	Unlikely	None	Site-specific survey	None
SOCIOECONOMIC				
Significant increase in th assessed value of Morrow County	Likely	County-wide	Positive impact	None
Construction and operation proposed project will incre employment in local area	Likely	Local area	Positive impact	None

Table 5-1
Impact Table - Coyote Springs Cogeneration Plant

Impact Table - Coyote Springs Cogeneration Plant

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
SOCIOECONOMICS Cont.				
Construction of proposed project will increase dema for temporary housing	Likely	Local area	None	None
Incremental increase in demand for law enforceme and fire protection servic	Likely	Plant/local ai	Increased property tax revenue should more tha compensate for increase demand	None
Increase in school distri enrollment	Likely	County-wide	Increased property tax revenue should more tha compensate for increase costs	None
Increased demand for libra services.	Likely	Slight-local area	Increased property tax revenue should more tha compensate for any increased demand.	None
RECREATION				
Nearby recreation sites	Unlikely	None	None	None
VISUAL AND AESTHETIC RESOURCES				
Nearby residences, Washington Highway 14, I- Columbia River, portions of Umatilla Wildlife Refuge, a the Coyote Springs State Wildlife Refuge.	Likely	Moderate	(1) Paint buildings and exhaust stacks in neutr shades to minimize visu impacts. (2) Minimize th amount of exterior lightin night. (3) Use native mat landscaping.	None
Other key observation points	Unlikely	Slight	(1) Paint buildings and exhaust stacks in neutr shades to minimize visu impacts. (2) Minimize th amount of exterior lightin night. (3) Use native mat landscaping.	None
PROTECTED RESOURCES				
Oregon DOE designated protected resources	Unlikely	Slight	None	None
PUBLIC HEALTH AND SAFETY				
Toxic and hazardous waste	Minimal	Localized area	Requirements of SPCC Pla pursuant to the Clean Wa Act	None
Electric fields	Likely	None	Standard safety precautions	None
Magnetic fields	Likely	Unknown	None	None
NOISE				
Construction noise	Likely	Significant, localized/short term	None	None
Operation noise (increase above background)	Likely	Insignificant, localized/long-term	None	None

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
OTHER ENVIRONMENTAL ISSUES				
Global warming	Likely	Slight	Control emissions by be available control technolo Natural gas used as fue	None
Acid rain	Likely	Slight	NOx emission minimized with selective catalyt combustion.	None
AIR QUALITY				
Particulates released duri construction	Likely	High-localized	Wet soil as needed.	None
Mist from cooling tower	Likely	Localized-slight	None	None
Criteria Pollutants				
NOx	Likely	Moderate	Analyze impacts to so vegetation and visibili demonstrate non-impact Class 1 areas. Use "bes available control technology."	Prevention of Significant Deterioration (PSD), and DEQ Air Contamina Discharge Permit
CO	Likely	Moderate	See above	Prevention of Significant Deterioration (PSD), and DEQ Air Contamina Discharge Permit
SO2	Likely	Slight	Use of natural gas	DEQ Air Contaminant Discharge Permit
TSP/PM-10 (Particulate Matter)	Likely	Slight	See above	DEQ Air Contaminant Discharge Permit
Air Toxins				
Iron, arsenic, barium, sil (cooling towers)	Unlikely	None	None	None
Ammonia (Boilers and turbines)	Likely	Slight	Selective catalytic redu system adjusted to mini ammonia release.	DEQ Air Contaminant Discharge Permit
Formaldahyde (Boilers and turbines)	Likely	Slight	Good combustion controls	DEQ Air Contaminant Discharge Permit
Odor	Unlikely	None	None	None
Photo-Chemical pollutants	Minimal	Slight	None	None

Table 5-1 (continued)
Impact Table - Coyote Springs Cogeneration Plant

Natural Resource Impacts - Cogeneration Plant

Soils and Geology

Soils - Minimal impacts to soils are expected from plant construction other than construction-related impacts such as fugitive dust leaving the site, and erosion caused by soil disturbances during construction. Determination of soil impacts are based on soil characteristics, topography, vegetation, and erosion elements including water and wind. The proposed project site is mostly flat, dry, and sparsely vegetated. Water erosion would be minimal because soils are permeable. Topsoil and vegetation must be replaced to avoid wind erosion. An Erosion and Sedimentation Control Plan was prepared for the Coyote Springs Plant by Ebasco (see Appendix H). The plan was approved by the Morrow County Planning Department on December 6, 1993. Measures such as sediment basins, sediment traps, storm inlet protection, and drainage swales would be used to control erosion and sedimentation.

Seismic Hazards - Earthquake damage to structures is based on the magnitude of the event, distance from the earthquake epicenter, type and depth of soils, degree of saturation of underlying soils, and type of construction and materials used in the structure.

The proposed project site is east of the Cascade Mountain Range in Oregon and within seismic Zone 2B, according to the 1991 Edition of the UBC. Construction must be based on the seismic zone factor Z of 0.2 (.2g-Acceleration/gravity) or greater in this area. Structures designed to pass this code are considered appropriate for occupant safety for a seismic event with a 475-year return period. However, facilities may be inoperable or unsafe. The minimum code is adjusted depending on the type of facility and soil conditions at the site.

To ensure essential facilities are operable and hazardous facilities (containing or supporting toxic or explosive substances) would not endanger the public, the seismic zone factor is multiplied by an importance factor of 1.25. The seismic zone factor for construction of this type of facility in this zone is .25 (for a seismic event with a 950-year return period).

Soil type at the plant site may raise the seismic zone factor and require an appropriate change in building construction. Soil liquefaction is a phenomenon in which loose, submerged, cohesionless soils lose strength during cyclic loading in strong earthquake ground shaking. Clay soils and an increase in the density of cohesionless soils minimizes this effect. A Standard Penetration Test (SPT) was conducted to determine the density of the soils at the plant site. (PGE, 1993.)

Seismic Risk - The Coyote Springs Project location is within seismic zone 2B. The ODOE Proposed Order, (Appendix D, page 22) requires that PGE design and construct the facility to address any estimate of peak ground acceleration which exceeds that covered by seismic zone 2B.

Ground Shaking - All non-critical buildings and structures would be designed and constructed in accordance with the latest UBC requirements with an importance factor of 1.00. All critical project structures would be designed and constructed with an 1.25 importance factor.

Fault Offset Hazard - The likelihood of surface rupture or fault offset in the project area is very remote, due to the lack of identifiable active faults in the area.

Soil Liquefaction - Loose layers of fill in upper materials at the site would be compacted to minimize the potential for soil liquefaction. The potential for liquefaction in underlying dense and very dense soils is slight.

Seismically Induced Waves and Flooding - During strong earthquakes, strong waves such as tsunamis or seiches can be generated in large bodies of water. These waves can cause substantial damage to shoreline facilities. Seiches occur in large inland bodies of water such as lakes or wide rivers.

The site is about 190 m (625 ft.) south of the Columbia River. Columbia River water levels are controlled by a system of dams to a minimum pool level of elevation 78.3 m (257 ft.) and a maximum pool level of 81.7 m (268 ft.). The plant site elevation is 86.7 m (285 ft.), which is well above the maximum pool level. An existing earth embankment for the railroad is between the river and the main plant site. The chance of seismically-induced wave damage such as a seiche, and damage from flooding is remote.

Stability - Plant operations would not impact site stability. Heavy equipment would be operated on properly designed spread footing and mat foundations. Water storage tanks would be supported on grade and on ring footing foundations. All foundations would be on compacted fill placed over the DDC-densified fill during construction. Chemical storage tanks would be surrounded by confinement barriers to contain potential spills or leakage. Barriers would be either a reinforced concrete slab with surrounding perimeter walls or a perimeter earth berm with a waterproof membrane.

Fish and Wildlife Impacts - Cogeneration Plant

Fisheries - Potential impacts to fish and wildlife during construction and operation of the proposed project were evaluated based on the likelihood that the project would cause direct mortality of individuals, temporary or permanent loss or alteration of habitat, or disturbances that may cause wildlife to avoid areas of suitable habitat.

Filling the gravel pond at the plant site would likely eliminate fish and low-quality fish habitat. The number and kind of fish impacted is not known, but would not be significant based on the poor quality of fish habitat and the limited recreational fishing that occurs there.

No impacts on water quality or fish habitat would occur in the Columbia River or Messner Pond from construction or operation of the proposed project. During operation, all wastewater from the plant would be discharged to the Port's industrial wastewater system. Wastewater with oil contaminants would be treated prior to discharge to the City of Boardman sewage treatment facility.

Wildlife - About 9 ha (22 acres) of wildlife habitat of varying quality would be permanently lost from construction of buildings and other project facilities at the main plant site. Some direct mortality of wildlife could occur during project construction. This is particularly true for less mobile species such as reptiles and small mammals, burrowing species (e.g., ground squirrels), and ground-nesting birds (e.g., lark sparrow, western meadowlark) in areas where vegetation clearing and construction equipment traffic would occur. The impact of this loss of wildlife is considered insignificant due to the low quality of habitat that currently exists there. Proposed landscaping around the site following construction would provide new, although low-quality, wildlife habitat.

During construction and operation of the cogeneration plant, wildlife use of Messner Pond could be inhibited by increased human activity. This is particularly true for species most sensitive to visual and auditory disturbances (e.g., mule deer, some raptors). However, a well-developed riparian fringe dominated by Russian olive trees surrounds much of Messner Pond, and would provide some buffering of visual and auditory disturbances from the main plant site. In addition, wildlife use of the pond and surrounding habitat currently exists with daily visual and auditory disturbances from trains, trucks, and a rock-crushing plant. These existing sources of noise and visual disturbance are closer to the pond than construction activities at the plant site would be.

PGE conducted a detailed study of cooling tower impacts to Messner Pond. Operation of the cooling tower may deposit dissolved chemicals contained within drift water droplets into Messner Pond and on surrounding vegetation. The chemicals of greatest concern, heavy metals, would either be nondetectable or only present in trace amounts. The majority of dissolved chemicals in drift water occur commonly in nature (salts). The operation of the cooling tower is not expected to result in adverse effects to Messner Pond water quality and surrounding vegetation, and any change in chemical composition within the pond would be below levels considered toxic.

Mitigation - PGE, in conjunction with ODFW, prepared an Ecological Monitoring Program. This plan is in Appendix E. This plan outlines a number of actions that will be taken to prevent project impacts to fish, wildlife and vegetation.

To provide a visual and sound buffer, PGE proposes to plant trees along the west shore of Messner Pond. The plantings would extend from the railroad embankment to the gravel pond.

If other concerned agencies or subsequent studies indicate there would be adverse impacts on fish, wildlife, or their respective habitats, PGE would develop and implement (in conjunction with ODFW) a ***mitigation*** plan and other measures as may be deemed necessary to offset anticipated impacts.

Threatened and Endangered Species Impacts - Cogeneration Plant

Federally Listed Animals - Impacts to listed threatened or endangered animal species were evaluated by Beak Consultants. A copy of their Biological Assessment in Appendix C. The bald eagle, the peregrine falcon, and three salmonoids are the only listed species known or suspected to occur in the project area. Specialists evaluated impacts using the following general criteria: potential of the project to cause direct mortality of individuals, alter suitable habitat either temporarily or permanently, or cause a disturbance (visual or auditory) that results in avoidance of suitable habitat. The Biological Assessment concludes: "the proposed action may effect, (sic) but is not likely to adversely effect (sic) individuals or populations of the bald eagle or its habitat. It is also concluded that the proposed action will not effect (sic) individuals or populations of the peregrine falcon, Snake River spring/summer chinook salmon, Snake River fall chinook salmon, and Snake River sockeye salmon or their habitat. These conclusions are based on strict adherence to the conservation measures described herein..."

Measures defined to reduce impact on listed species are described in Appendix C, and PGE has agreed to adhere to these measures. Possible actions include: erection of perch guards to protect raptors from electrocution; provide information to construction workers on minimizing disturbance; planting of trees along the shore of Messner Pond; construction of a sediment retention pond to protect water quality; monitoring wildlife impacts during construction, and if necessary, consulting with the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service if unanticipated impacts occur.

BPA has reviewed the Biological Assessment and concurs with the opinion that the Coyote Springs Cogeneration Project is not likely to affect the bald eagle and the peregrine falcon. A copy of this detemination and the Biological Assessment were sent to the U.S. Fish and Wildlife Service. BPA also agrees with the no effect determination regarding impacts to threatened or endangered salmon species. BPA provided the National Marine Fisheries Service with a copy of the Biological Assessment and the no effect determination. (See also Cumulative Impacts.)

State Special Status Species Impacts - Special status species identified within the project area were described in Chapter 4. See Federally listed species if a species is listed by both the state and Federal government. Although four species of concern (American white pelican, Franklin's gull, bank swallow, and long-billed curlew) were documented to occur in the project area, only the bank swallow colony on the plant site would potentially be impacted by the proposed project.

Based on field surveys, bank swallow populations in the area appear abundant. On the railroad embankment just north of the project site, 3-4 dozen nest holes were observed. It is estimated that 12 pairs are actively using these nests. PGE proposes to build a fence to restrict pedestrian and equipment intrusion near the bank swallow colony. The fence would be a three-strand wire fence about 1.5 m (5 ft.) high and would extend about 76 m (250 ft.). The fence would be about 7.6 m (25 ft.) south of and parallel to the bank swallow colony site. The fence would have a sign that identifies the area as sensitive bird habitat. The fence would be built during the winter, prior to the first arrival of any bank swallows (April 1). Based on these measures, project construction is not expected to negatively impact the bank swallow colony.

PGE has prepared an Ecological Impact Monitoring Plan (Appendix E), in conjunction with the ODFW to insure protection of nearby vegetation, fish and wildlife. Potential measures included in the plan are: seasonal restrictions on construction within a species-specific radius of a nest site (e.g., Swainson's hawk, long-billed curlew) or colony location (e.g., Washington ground squirrel); and placement of nest platforms on transmission towers for raptors (e.g., Swainson's hawk, ferruginous hawk).

Federally Listed Plants -There are no known or suspected Federally listed threatened or endangered plant species within the project area. A survey for threatened and endangered plants, conducted during spring 1993, identified no special status plant species (see Appendix A).

State Special Status Plants - Potential impacts on special status plant species were evaluated relative to OAR 603-73-090. A survey for threatened and endangered plants, conducted during spring 1993, identified no special status plant species within the impact zone (see Appendix A).

Water Impacts - Cogeneration Plant

Construction of the proposed project could also cause erosion from stormwater or wind. Ground disturbing activities during construction of the proposed project could lead to erosion of unprotected soil, which could cause siltation of adjoining waterways. The Oregon Department of Energy's Proposed Order imposes a series of conditions on PGE relating to preventing water impacts. A copy of the Proposed Order is in Appendix D. A ***stormwater pollution prevention plan (SWPP Plan)*** was prepared by PGE and approved by Morrow County in December 1993. A copy of the plan is in Appendix G. PGE also has prepared an Erosion and Sedimentation Control Plan (see Appendix H). This plan will serve as a guide to protect water from soil disturbing activities during construction of the plant.

Surface Water - No direct impact to the Columbia River is expected from construction. Plant operation may reduce the volume of water in the alluvial aquifer and might reduce the volume of water recharging the river. Because the gradient is from the southeast to the northwest, the river is not expected to recharge the alluvial aquifer being used by the City of Boardman.

No direct impact to Messner Pond is expected by construction. Particulate deposition from cooling tower drift will not result in significant adverse impacts to Messner Pond air quality and surrounding vegetation (see Appendix I, Potential Cooling Tower Drift Effects on the Water Quality and Vegetation at Messner Pond).

Wastewater effluent from the facility would be discharged to the Port's industrial wastewater system. Effluent from the industrial wastewater system is used for crop irrigation (see Exhibit O, PGE, 1993). No adverse impact to protected areas is expected from use of this existing wastewater treatment system.

Impacts to the gravel quarry pond would be direct and long term**.** The impact would be caused by filling 1.25 ha (3 acres) of the pond with gravel (presently 4.36 ha [10.4 acres]) for the plant foundation. No impact is expected from plant operation. Mitigation for filling the pond is not expected to be required as pits excavated in dry land for obtaining fill, sand, or gravel are not regulated under the Clean Water Act (40 CFR328.3(e)) or under Oregon's Removal-Fill Law (OAR 141-85 010).

PGE has registered for coverage under the Oregon DEQ General Permit 1200 to construct and operate storm water control facilities and to discharge treated storm water to waters of the state (see Appendix G). Morrow County issued a National Pollutant Discharge Elimination System (NPDES) Storm Water Discharge Permit to PGE on May 27, 1993. An Erosion and Sedimentation Control Plan (Appendix H) was submitted by Ebasco Constructors Inc. and was approved by Morrow County on November 6, 1993.

Hazardous materials would be handled on-site and transported to the site according to applicable Federal and state requirements and the Spill Prevention Control and Countermeasure Plan (SPCC Plan). Accidental release or spill of hazardous materials is unlikely, and no adverse impacts to protected areas are expected.

Groundwater - Water needs and planned sources for the Coyote Springs Plant were described on pages 3-10 and 3-11. Existing permitted Port of Morrow wells will supply the plant. Carlson Sumps 1 and 2, and Port Well #3, alluvial aquifer wells, will provide 7.2 m^3/m (1910 gpm), a majority of plants water needs. Port Well #4, an existing deep basalt well, will provide 2.9 m^3/m (758 gpm). Water withdrawals from these wells were transferred from irrigation or industrial use in order to serve the Coyote Springs Plant. Well withdrawal rates to serve Coyote Springs will not increase from their present rates. The City of Boardman has agreed to provide a back up supply of 7.6 m^3/m (2,000 gpm) of water for Coyote Springs from their Ranney Collector (also alluvial).

The alluvial aquifer transmits water quickly and impacts from pumping are generally very localized. The rate of water withdrawals from the alluvial wells will not increase from existing levels due to the Coyote Springs Plant. Thus no significant changes in groundwater levels are expected due to alluvial groundwater pumping for the plant (CH2M Hill, 1994).

The hydrologic connection between the alluvial aquifer and the Columbia River creates a condition in which pumping from alluvial wells to serve the Coyote Springs Cogeneration Project could reduce flows in the Columbia River. The maximum water demand of the plant was calculated and is equivalent to a 0.17 cms (6 cfs) reduction of groundwater inflow to the John Day pool of the Columbia. Considering that flows in the John Day pool average over 8,495 cms (300,000 cfs), a 0.17 cms (6 cfs) reduction in flow is not significant.

Pumping from Port Well #4, which draws from the deep basalt aquifer, could cause a long-term reduction in the groundwater level. If unacceptable impacts due to pumping from Port Well #4 are observed in the future, the Oregon Water Resources Department (**OWRD**) has the authority to limit further appropriations and reduce the total pumping demand based on seniority of water rights. This authority has been exercised at the Ordinance Critical Groundwater Area (**OCGA**) which is located east of the Boardman near Hermiston. The OWRD is not considering expanding the OCGA. The City of Boardman's Ranney Collector (alluvial) provides a 7.6 m^3/m (2,000 gpm) backup water supply should withdrawals from the deep basalt aquifer be restricted.

In summary, no direct adverse impacts to groundwater are attributed to the Coyote Springs Plant. See section 5.1.4 for a discussion cumulative groundwater Impacts.

Impacts to groundwater from accidental spills of toxic or hazardous substances will be minimized through PGE's SPCC Plan which will be completed 90 days prior to operation of the plant.

Air Impacts - Cogeneration Plant

The Oregon DEQ issued an Air Contaminant Discharge Permit to PGE for the Coyote Springs Plant on April 6. 1994. A copy of this permit is in Appendix F. The permit imposes a variety of conditions and limitations on operation of the project. Air emissions and resulting impacts predicted are described in the following pages and tables.

Turbine and auxiliary boiler operations would generate significant quantities of NO_x and CO as well as lesser quantities of particulate matter, sulfur dioxide and VOCs. (See Table 5-2.) The quantity of pollutants emitted from the turbines would vary with ambient air density and load conditions; the denser the air and the greater the load, the greater the emissions. Emissions from the auxiliary boilers are more consistent and vary only with load. Worst case emission rates are expected to occur in the winter because cold air is denser than warm air and because the load is higher in the winter. The values presented as Plant Site Emission Limits in Table 5-2 reflect worst case operating conditions. Varying emission rates (including worst case) were used to predict impacts to existing air quality.

Impact of criteria pollutants emitted from the proposed facility were evaluated under the Prevention of Significant Deterioration/New Source Review process. Several criteria pollutants such as volatile organic compounds, sulfuric acid and beryllium are exempt from PSD process for this facility because they would be emitted in small quantities. Two EPA-approved Gaussian

dispersion models (ISC2ST and COMPLEX1) were used to predict the proposed facility's impacts on the Boardman airshed. Impacts were predicted for oxides of nitrogen, carbon monoxide, particulate matter, ammonia and formaldehyde. The emission points considered were the two 64 m (210 ft.) high turbine stacks, and the 56 m (185 ft.) high stack serving the two auxiliary boilers. Impacts were predicted for emission rates reflecting various loads. For each load condition, three separate model runs were made, one for each of the representative ambient temperatures -5.3°, 11.6°, and 29°C (22.5°, 52.8°, and 85°F). EPA screening meteorological conditions and additional wind speed/stability category combinations suggested by DEQ were used for all modeling runs. Mixing heights were set equal to worst case conditions as determined by the EPA SCREEN dispersion model. The models receptor grid extended approximately 21 km (13 miles) from the proposed facility. Receptors were spaced at 500-m (1,640-ft.) intervals except for fenceline and maximum impact receptors (around Canoe Ridge, Washington), which were spaced at 100-m (328-ft.) intervals.

Table 5-2
Potential Annual Emissions of Criteria Pollutants

ID	Description	Maximum Operating Hours[a]	Pollutant	Emissions		Total tons/yr.	Combined Total tpy[b]
				ppm	lb./hr.		
1 2	HRSG A & HRSG B Stacks	8,760 each	NO_x CO SO_2 TSP/PM_{10} VOC	4.5 15 NA NA .4	30 49 1.09 9 3	130 215 4.8 39 13	260 430 10 78 26
3	Aux Boiler A & Aux Boiler B Common Stack	8,760 each	NO_x CO SO_2 TSP/PM_{10} VOC	40 200 NA NA 10	17.7 58.6 0.22 1.84 1.66	77.5 257 0.96 8.06 7.27	155 513 2 16 15

a. Expected operating hours:
   1. HRSG emissions - 7,760 hours/year/unit.
   2. Auxiliary boilers - 1,000 hours/year/unit.

   Note: There may be cases where one turbine and one auxiliary boiler would operate simultaneously. However, the emissions from this operating scenario will not exceed the case where just two turbines are operating simultaneously.

b. Underlined values are proposed annual plant site emission limits (PSELs). Figures are rounded off to the nearest whole number.

NA - not applicable.

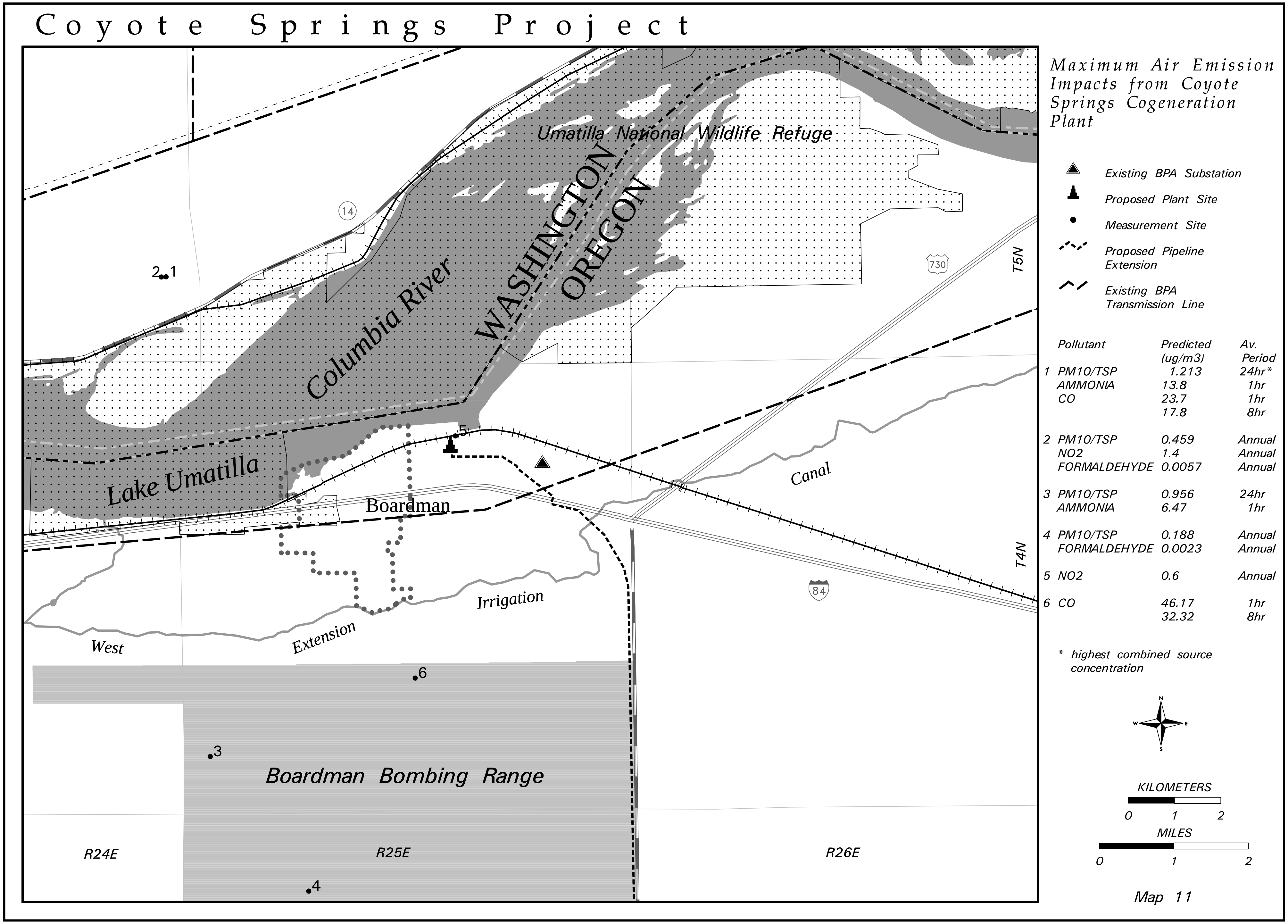
Maximum predicted ambient concentrations due only to proposed facility emissions are shown on Map 11. Canoe Ridge, 7.2 km (4.5 miles) northwest of the proposed facility in Washington, had the highest predicted impacts. Ambient concentrations on Canoe Ridge were predicted to be: NO_2 1.4 ug/m³ (annual average), PM-10 1.2 ug/m³ (24-hour average), CO 23.7 ug/m³ (1-hour average), ammonia 13.8 ug/m³ (1-hour average) and formaldehyde 0.0057 ug/m³ (annual average). The EPA NO_2 Significant Impact Level (40 CFR 51.165 (2) b (2)) is exceeded in Washington. Exceedance of the NO_2 significant impact level triggers the requirement for more comprehensive modeling of other competing NO_2 sources in the airshed (see discussion below). Predicted ambient concentrations of other priority pollutants did not exceed state or Federal significant impact levels, indicating that emission of these pollutants from the proposed facility would not significantly impact existing air quality. The maximum predicted PM-10 concentration in Oregon (0.956 ug/m³ - 24-hour average) approached the Oregon Significant Impact Level of 1 ug/m³ (OAR 340-20-220). Also note that the maximum Washington 24-hour PM-10 concentration (1.2 ug/m³) exceeds the Oregon significant impact level. See Map 12 for NO_2 contours and locations of maximum impact.

NO_2 competing-source modeling was accomplished for 37 significant NO_2 sources in the region, including two natural gas-fired cogeneration plants proposed for the Hermiston area. Competing-source modeling determined the amount of PSD increment remaining in the airshed after all proposed facilities are operational. The modeling also determined if the NAAQS would be exceeded. The entire airshed, with existing and proposed sources, would consume 13.6 percent of the available 25 ug/m³ NO_2 increment. PGE's Boardman Coal Plant and the NW Pipeline compressor station in Benton County, Washington 25 km northeast of Boardman are included in the computer modeling, but do consume increment because they were built prior to EPA's PSD regulations. The amount of NO_2 increment consumed by the Coyote Springs facility is 1.16 ug/m³. The maximum combined impact of the proposed facility and the 37 other NO_2 sources including the Boardman Coal Plant but not the compressor station, was predicted to be 31.4 ug/m³ NO_2 (annual average), occurring 500 m (1,640 ft.) southwest of the proposed facility. DEQ has determined that this area's background NO_2 concentration is 30 ug/m³. The predicted NO_2 combined impact (31.4 ug/m3) coupled with background concentration gives a total maximum impact of 61.4 ug/m³. The NAAQS NO_2 standard is 100 ug/m³.

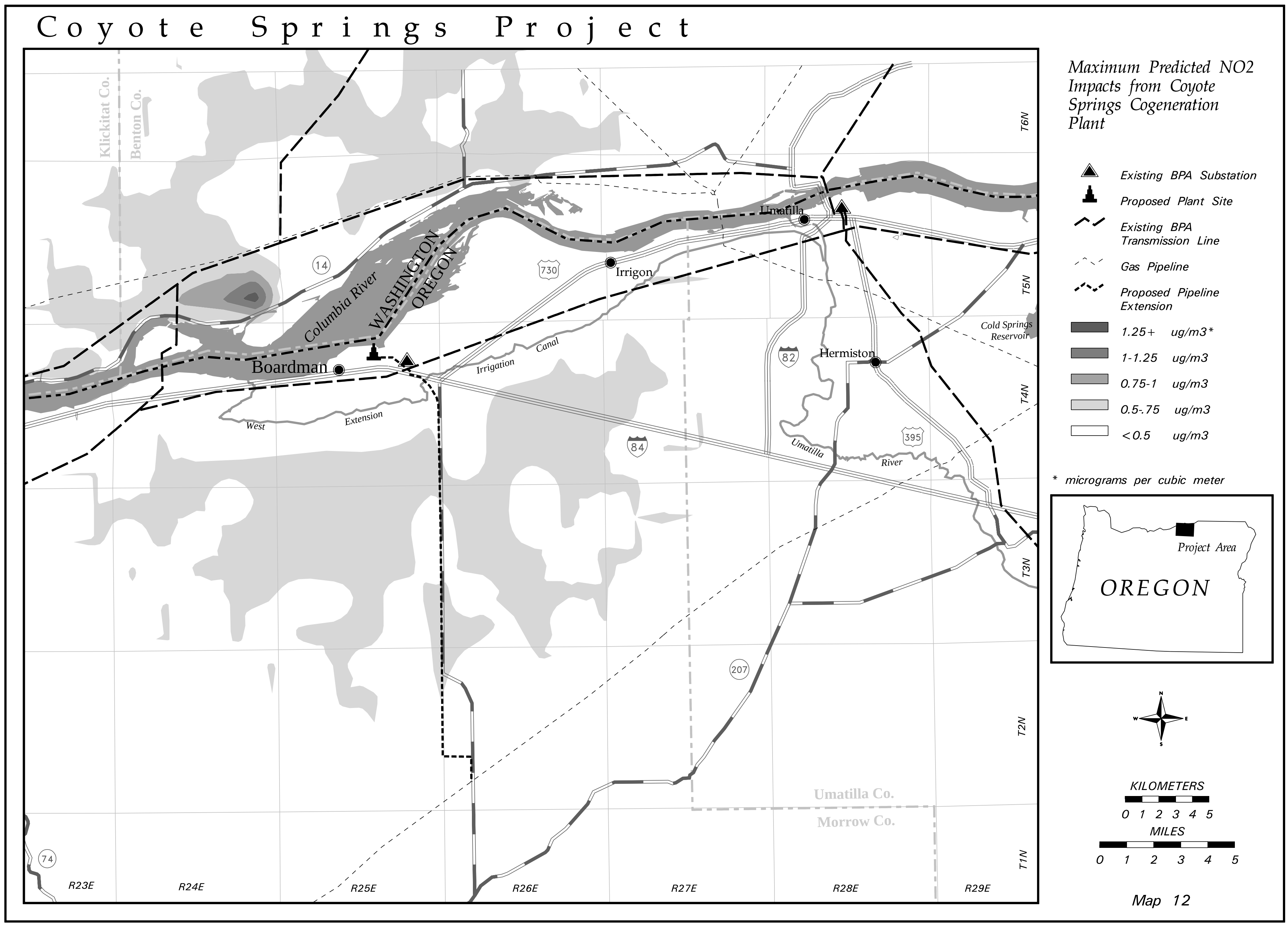
Chester Environmental also performed combined source modeling which included both the compressor station and the Boardman Coal Plant. With the compressor station, the highest predicted NO_x impact was located near the compressor station and was 485 ug/m³. The Coyote Springs Plants contributes only 0.135 ug/m³ (or 0.03 percent) to this total.

The NAAQS are designed to protect human health and the environment. Because none of the NAAQS would be exceeded in the Boardman airshed because of the proposed project, no measurable effects to local vegetation, soils, wildlife or human health should be expected to occur as a direct result of facility emissions. The NAAQS are exceeded in the vicinity of the compressor station. This exceedence may be affecting local vegetation/wildlife, however the proposed facility has insignificant impacts on this area's air quality.

Map 11. Maximum Air Emission Impacts from Coyote Springs Cogeneration Plant.



Map 12. Maximum Predicted NO2 Impacts from Coyote Springs Cogeneration Plant.



Odor - Ammonia is the only pollutant emitted from the proposed facility in significant quantity to possibly pose an odor problem. The highest predicted one hour ammonia concentration in Oregon was 6.47 ug/m^3, and 13.8 ug/m^3 in Washington, which are below the odor threshold for ammonia (26.6 ug/m^3). No odor impacts are expected.

Class I Areas and National Scenic Areas - The Valley screening mode of COMPLEX1 was used to predict the potential impacts to Class I areas. Modeled impacts were well below PSD Class I increments for all criteria pollutants and below detection limits in most cases. Model predictions indicate that there would be no measurable impacts to these sensitive areas from the criteria pollutants emitted by the proposed facility.

Effects of NO_2 on plant life in these Class I areas were also considered. Maximum modeled impacts of NO_2 are at least two orders of magnitude below the U.S. Forest Services' *No Impact Level* for lichen and all plant species. Impacts on aquatic resources in Class I areas are also expected to be nondetectable.

EPA-recommended visibility analysis model VSCREEN was used to evaluate the visibility impacts of the proposed facility on nearby Class I areas. Modeled results predict that the proposed facility would not adversely degrade visibility in the nearby Class I areas or in the Columbia Gorge Scenic Area.

Because no protected area is closer than 6 km (4 miles) to the proposed plant, no significant impacts are expected.

Air Toxics - Chester Environmental estimated emission rates of air toxics from the proposed facility (see Tables 5-3 and 5-4). Emission rates for the boilers and the turbines were derived from one of two methods: the California Air Resource Board Speciation Manual, or by using emission factors based on heat input published in EPA's *Toxic Air Pollutant Emission Factors* (EPA-450/290-011). Ammonia emission rates were provided by the selective catalytic reduction unit vendor (Peerless). Emissions from the cooling tower were calculated using mass balance techniques.

Calculated emission rates were compared to DEQ's significant emission rates. Dispersion modeling must be performed for all compounds emitted from new sources which exceed these rates. Dispersion modeling predicts the pollutants' ambient concentration. From this prediction an estimate of the environmental impacts can be made. Emissions less than the specified significant emission rates are presumed to have an insignificant effect on the environment. Only two toxic compounds were found to exceed the significant emission rates: formaldehyde and ammonia. Ammonia generated from the selective catalytic reduction unit is estimated at 434.4 tonnes (427.5 tons/year). Formaldehyde, a by-product of natural gas combustion, is estimated at 1029 kilograms (2,269 pounds)/year. Impacts from these two pollutants were modeled using an EPA-approved model (ISC2).

Table 5-3
Emission Rates for Known and Suspected Carcinogenic Pollutants

Pollutants of Concern	Total Emissions Firing Turbines[a] (lb/yr)	Total Emissions Firing Auxiliary Boilers[b] (lb/yr)	Total Emissions Firing Both (lb/yr)	DEQ Significant Emission Level (lb/yr)
Benzene	174	234	408	3,100
Formaldehyde	1,716	553	2,269	2,000

a. Assumes 7,760 hours/year/turbine multiplied by emission rate (lb/hr) in Table 5-3.
b. Assumes 1,000 hours/year/boiler multiplied by emission rate (lb/hr) in Table 5-3.

The highest predicted formaldehyde concentration in Oregon was 0.0023 ug/m³, at a location on the bombing range approximately 10 km (6.2 miles) south-southwest of the proposed facility (see Map 11). At this low level the only concerns are long-term health effects such as cancer. This concentration has an associated cancer risk of 2.49 x 10^{-8}, nearly two orders of magnitude less than EPA's acceptable risk level of one in a million (1 x10^{-6}) excess cancer cases. The highest formaldehyde concentration in Washington was 0.0057 ug/m³ at a location on Canoe Ridge (see Map 11). Formaldehyde emissions would not harm plants or animals.

The maximum predicted one hour ammonia concentration in Oregon was 6.47 ug/m³ at a location on the bombing range approximately 8 km (5 miles) southwest of the facility. This one hour impact corresponds to a 4.5 ug/m³ 8-hour average. Oregon's acceptable ambient concentration for ammonia is 170 ug/m³ (8-hour average). The maximum ammonia concentration in Washington was 13.8 ug/m³ (1-hour average) at a location on Canoe Ridge. Washington's Acceptable Source Impact Level for ammonia is 59.9 ug/m³ (24-hour average) and 0.077ug/m³ (annual average) for formaldehyde. Both the Oregon and Washington maximum predicted ammonia impacts are an order of magnitude below state safety thresholds and an order of magnitude below the inhalation ***No Observed Effects Level (NOEL)*** (Integrated Risk Information System December 1993). Maximum predicted ammonia concentrations would not adversely effect animals or plants. Maximum impact locations are presented on Map 11.

Table 5-4
Emission Rates for Non-Carcinogenic Pollutants

Pollutants of Concern	Total Emissions Firing Turbines[a] (lb/8 hr)	Total Emissions Firing Auxiliary Boilers[a] (lb/8 hr)	DEQ Significant Emission Level (lb/8 hr)
Ammonia (NH_3)	390.4	0	31
N-Butane	2.04	4.7	3,500
Cyclohexane	0	0.50	1,920
Hexane	0	0.5	3,210
N-Pentane	0.2016	3.1	3,300
Pentane	0.2016	4.7	3,300
Toluene	0	0.9	685
Chromium (Cr)	0.07	0	0.9
Cobalt (Co)	0.07	0	0.09
Copper (Cu)	0.07	0	2
Manganese (Mn)	0.07	0	6
Mercury (Hg)	0.00	0	0.2
Nickel (Ni)	0.07	0	2

a. Based on converting emission rates in Tables 7-1 and 7-2 to lb/8 hr. Emissions presented are from both turbines

Air Impacts from the Cooling Tower - An analysis of potential cooling tower drift effects is in Appendix I. Air toxins emitted from the cooling tower are presented in Table 5-5. All listed pollutants are emitted in small quantities and no impacts are expected to result from their release. Tolyltriazole, acrylate copolymer and potassium hydroxide are chemicals are corrosion/deposit inhibitors. Potassium Hydroxide, tolyltriazol and acrylate copolymer are not assigned Oregon significant emission rates, Washington acceptable source impact levels or Oregon acceptable ambient concentrations. However, Washington's acceptable source impact level for potassium hydroxide is 6.7 ug/m^3-24-hour average.

A hard-water mist, 5.0 liters (1.32 gal.)/minute with 2400 mg/L total dissolved solids would be emitted from the cooling tower. The volume of mist and distance the mist would travel before evaporating or condensing would vary with ambient temperature and humidity. Less mist would be emitted on cold, moist days than on warmer days. During damp, cold periods, the mist emitted would condense and deposit relatively close to the tower. During sunny, hot weather the mist would rapidly evaporate and disperse into the atmosphere.

Fogging would take place during cold moist periods and is expected to occur occasionally on Ullman Boulevard west of the plant but is not expected to occur on I-84. On average, the mist is expected to evaporate within 305 m (1000 ft.) of the tower, leaving behind a small amount of dissolved solids to disperse as particulate matter 130 kg (280 lb). (PGE, 1993.) Moisture emitted from the cooling tower which condenses and impacts the ground is called drift. Drift from the cooling tower would amount to one gallon/minute. The dissolved solids would contain small amounts of iron, silica, arsenic and barium (see Table 5-5). In addition, small amounts of tolyltriazole, acrylate copolymer and potassium hydroxide (corrosion inhibitors/ deposit control agents) would be emitted. The small amount of pollutants emitted from the tower would have no impact on the Boardman airshed.

Air Impacts from Construction Operations - Emissions generated during construction of the proposed facility would originate from temporary fuel oil tank(s), construction equipment, fugitive dust, and vehicles used by workers to commute to the site. Vehicle exhaust connected with construction operations would be insignificant compared to exhaust generated by traffic on I-84, located directly south of the proposed facility. Fugitive dust generated by construction operations would be minimized by soil wetting on an as-needed basis. Though dust would be controlled, there is expected to be some adverse, but short-term effects on local air quality during the early phases of construction.

Global Warming - Gases thought to contribute to global warming are commonly referred to as "greenhouse" gases. Greenhouse gases include: CO_2, methane (CH_4), nitrous oxide (N_2O), NO_x, non-methane VOCs and stratospheric ozone depleting substances such as chlorofluorocarbons.

Table 5-5
Calculated Cooling Tower Emissions

Chemicals	Water Concentration (mg/L)	Air Emissions (tons/year)	DEQ Significant Emission Rate (tons/year)	Oregon Air Regulations Citation
Total Dissolved Solids	2084	6	15 (jPM-10)	340-20-225
Total Suspended Solids	5.3	0.02		
Calcium	779	2		
Magnesium	476	1		
Sodium	205	1		
Iron	1.9	0.01		
Copper	ND	ND		
Zinc	ND	ND		
Chloride	168	0.49		
Sulfate	1085	3		
Phosphate	15.7	0.05		
Silicate	149	0.43		
Potassium	19.2	0.06		
Nitrate	9.8	0.03		
Antimony	ND	ND	5	340-32-450
Arsenic	0.042	0.0001	0.005	340-32-450
Barium	0.49	0.001		
Beryllium	ND	ND	0.008	340-32-450 (0.0004 in 340-20-225)
Cadmium	ND	ND	0.01	340-32-450
Chromium	ND	ND	5	340-32-450
Lead	ND	ND	0.6	340-32-450 (same in 340-20-225)
Mercury	ND	ND	5	340-32-450 (0.1 in 340-20-225)
Nickel	ND	ND	1	340-32-450
Selenium	ND	ND	1	340-32-450
Thallium	ND	ND		
Acrylate Copolymer	10.2	0.03		
Tolyltriazole	3.9	0.01		

ND - not detected.

The quantity of CO_2 emitted when fossil fuels are burned is proportional to the carbon content of the fuel. The more carbon present, the more CO_2 emitted. The proposed plant would use natural gas to fire the combustion turbines. Natural gas is primarily composed of methane, which contains one carbon atom and four hydrogen atoms. Because of its low carbon content, natural gas combustion produces about 40 to 50 percent less CO_2 than coal and approximately 25 percent less than petroleum products (Cornot-Gandolphe, 1993).

As mentioned above, the plant would use methane to fire the turbines. Methane is at least 20 times more potent a greenhouse gas than CO_2. Because of this, it is important to keep methane releases to a minimum. Methane emitted from the world's natural gas pipelines and natural gas mining operations is less than 10 percent of methane emitted from natural sources such as tundra, swamps, forest floors, termites and cows (Sheppard, et al., 1982). In addition, most natural gas leaks occur within residential distribution systems and not in wholesale distribution systems such as the one linked to this plant. New techniques have virtually eliminated methane escape during drilling.

The source of natural gas for the proposed cogeneration plant is from actively producing gas fields in Alberta and British Columbia, Canada. The number of natural gas wells that would be needed to supply PGE requirements was estimated by PGT. The average total yield of Canadian natural gas wells was divided into the total requirements of the Coyote Springs Plant (41 billion BTUs per day). Using this method, the output of 16 gas wells would be used each year by the Coyote Springs Plant (PGT, 1993). For perspective, 4,000 Canadian gas wells were drilled in 1991 and the total number of wells in Canada number in the hundreds of thousands (PGT, 1992). Thus the Coyote Springs Plant would use only a small amount of gas compared to that available in Canada. The world's proven reserves are expected to last approximately 58 years at the present consumption rate (*Inside Energy/with Federal Lands, 1993*).

Emissions of NO_x from the facility would be controlled by best available control technology.

Reducing greenhouse gas emissions also involves energy conservation. If less fossil fuel is consumed, fewer pollutants are generated. Cogeneration facilities are considered energy efficient because excess steam generated from power production is used by nearby industries that would otherwise generate their own steam, which would consume energy.

President Clinton has committed the United States to reducing its greenhouse gas emissions to 1990 levels by the year 2000. The Clinton administration has issued a Climate Change Action Plan to accomplish this objective. The plan encourages the use of natural gas as opposed to other fossil fuels, for power generation, energy conservation measures, and reforestation projects. Currently, PGE does not plan to offset plant CO_2 emissions with reforestation.

In summary, the proposed plant's comparatively low CO_2 emissions, the gas industry's low percentage of losses in the wholesale gas distribution system, the plant's control of NO_x and N_2O emissions, and the facility's cogeneration capability combine to minimize the plant's global warming impacts. However, plant impacts could be further reduced by reforestation.

Acid Rain - SO_2 and NO_x are the main precursors to acid rain. The proposed facility would emit significant quantities of NO_x but not SO_2. NO_x emissions are being minimized by selective catalytic reduction. The selective catalytic reduction process not only reduces NO_x emissions, it also releases ammonia into the atmosphere. Ammonia has the capacity to act as a buffer and helps minimize nitric acid (acid rain) formation. Because of these factors, the proposed plant is not expected to significantly contribute to downwind acid rain.

Photochemical Pollutants - NO_x and VOCS emitted from the proposed facility can form other pollutants in the presence of sunlight. During stable atmospheric conditions, when sufficient quantities of ultraviolet light are present, NO_x can form detectable levels of tropospheric ozone, peroxyacetal nitrate and peroxybenzoyl nitrate, which are respiratory and/or eye irritants at elevated concentrations. In addition, these pollutants, along with NO_2, form aerosols that reduce visibility and give the atmosphere a brownish cast. Most volatile organic compounds emitted from the facility can form ozone in the presence of ultraviolet light. Volatile organic compounds are not emitted in large enough quantities to form detectable levels of ozone. Photochemical pollutants from plant emissions are expected to have a negligible impact on the Boardman airshed and no detectable impact on human health.

There are several reasons why photochemical pollutants would not accumulate in this area: (1) this area is rural and does not generate many pollutants, (2) at this latitude, high angle radiation necessary for photochemical pollutant formation only occurs during a short period of the year, (3) wind channeling by the Columbia River prevents pollutant build up, and (4) stable atmospheric conditions (necessary for pollutant buildup) only occur in this area approximately 5 percent of the year, predominately during night and early morning hours when UV radiation is absent or at too low of an angle to generate photo chemical pollutants (Thorkildson, 1993). Aerosols formed from photochemical pollutants and NO_2 may have some impact on local visibility during stable atmospheric conditions.

Vegetation/Wetland Impacts - Cogeneration Plant

Appendix I presents an analysis of potential cooling tower drift effects on water quality and vegetation. Impacts to wetland plant communities are not expected to be significant.

Socioeconomic Impacts - Cogeneration Plant

The construction, operation and maintenance, and eventual decommissioning of a major cogeneration facility can create both short-term and long-term impacts on the social and economic resources in a community. Socioeconomic impacts have been separated here into short-term impacts (preconstruction/construction/maintenance and decommissioning) and long-term impacts (facility operation). The study area to identify these impacts includes portions of Morrow and Umatilla counties in eastern Oregon.

Short-term socioeconomic impacts would include those impacts associated with construction of the proposed project, so-called "boom/bust" effects. Long-term impacts would include impacts on population, housing, employment, and impacts on local government services and infrastructure such as schools, health care, library services, solid waste disposal and water and sewer services.

It is difficult to forecast the short-term socioeconomic impacts related to large construction projects in rural areas. Uncertainties such as labor disputes, material shortages or weather-related problems may affect the peak level of the number of construction workers. Construction employment is the key variable affecting socioeconomic impacts for the short term.

Other impacts could include secondary impacts on the local economy, such as an increase in the supply and demand for goods and services, which could affect the price of these goods and services; an increase in crime with an increased population; and the temporary disruption to the agricultural resource from crop disturbances. Secondary impacts related to the construction work force are expected to be minor.

Increase in Tax Revenue - Construction and operation of the proposed project would significantly improve the assessed value of taxable property in Morrow County, and increase the local property tax revenues received by Morrow County. With PGE's capital investment of between $150 and $300 million depending on whether the utility constructs one unit or two, the assessed value of real property within the county would be expected to increase from 20-40 percent. BPA, as a Federal agency, pays no local property taxes so no revenue would be received by the county from BPA's new transmission facilities. BPA's investment in the proposed project, however, is negligible.

The proposed project is within Morrow County tax code area 25-04, one of 33 tax code areas within the County. The current tax rate (for tax year 1993/94) for this tax code area is $21.24. The actual ad valorem taxes that can be collected under Oregon's Measure 5, has been reduced to $17.85/per thousand of valuation (for this particular tax code area) for tax year 1993/94. Assuming the first tax year that the proposed plant would be assessed property taxes would be tax year 1995/96, the maximum amount that could be collected for the Morrow County School District would be $5.00 per thousand, plus any bonded indebtedness, and $10.00 per thousand for general government, plus any bonded indebtedness. Bond levies are unaffected by Measure 5.

Property taxes generated by the proposed plant would likely range between $750,000 and $1,500,000 annually (in 1993 dollars) for the Morrow County School District, and between $1,500,000 and $3,000,000 for general county government, plus any bonded indebtedness, depending on whether PGE completed one or both units. Tax revenue received by the County would be shared with the City of Boardman (Sweek, August 1993).

Although the new revenue would be a significant increase in the amount of local taxes received by the county, it is doubtful, according to the Oregon Department of Revenue, that the increase would have the effect of reducing individual tax burdens, due in part to limitations placed on individual taxing districts by Measure 5. New revenue could reduce individual taxes, however, if the total amount collected exceeded the amount required by individual taxing entities (Oregon Department of Revenue, August 1993).

Although the state does not receive any property tax revenues generated at the local level, the state would likely benefit from the proposed project because the state's contribution to Morrow County School District, if any, as a result of the reductions required under Measure 5, are likely to be less with the plant than without it. The state needs to make up the difference of what is collected under Measure 5, and the actual cost of operations of the Morrow County School District, as well as the other 266 school districts in Oregon. Differences have not been computed, because of the number of unknown variables.

Population - The proposed project is not expected to add significantly to the area's population. Assuming half of the permanent jobs come from outside the local area, an added 12 employees and their families would relocate to the area. Assuming 2.5 persons per household, this increase would be 30 individuals. Since this would be a population increase of less than 1 percent of Morrow County's population, there would be a negligible impact to the local population.

Employment - Construction of the proposed plant would likely take place over an 18-month period beginning in 1994. Construction of the power plant and attached substation/switchyard would peak with about 200 construction workers (Mayson, August 1993). In addition, about 130 construction workers would be required to construct the gas transmission line required to serve the facility, and another 20-25 construction workers would be required to construct BPA's portion of the project. While construction of the gas transmission line is expected to last five to six weeks (PGT, May 1993), construction of BPA's portion of the project is expected to be completed in one month or less.

As many as 355 construction workers are expected to work on various portions of the project, but not at the same time. While the three projects are expected to be constructed concurrently, peak employment could reach a total of 355 workers, depending on whether the peak period for the construction of the power plant coincides with construction of the gas pipeline. Because of the number of variables involved, it is difficult to accurately predict the actual number of construction workers in the area during the peak construction period.

Plant operation is expected to create about 20-30 full-time positions over the life of the facility. Three shifts are anticipated to be necessary to operate the plant: 16-20 workers during the day shift, and the remainder during each of two subsequent shifts. While this level of employment would not be considered to be a significant impact on the local area's employment base, due to the existing size of the labor force (28,000), it is considered a positive impact on employment in the local area.

Housing - The influx of non-local construction workers would likely affect the demand for temporary housing facilities in the local area. Construction of the proposed project and related facilities would require 355 workers, most likely from outside the local area. Construction is anticipated to begin in 1994 and be completed in 1995.

It is difficult to predict where construction workers would come from in advance of the award of a construction contract. It is assumed most craft workers would originate from the Tri-Cities area of southeastern Washington. Most individuals would likely commute to Boardman daily. Some of the workers would come from the local area. Some craft workers and laborers would be found in the local labor force. Craft workers would leave when their work is accomplished, to be replaced by other crafts persons. Not all of the construction work force would be present in the area at the same time.

A sufficient supply of temporary housing exists in the area to provide for the temporary housing needs of the non-local construction workers and their families. Because all facilities would likely be constructed concurrently, the vacancy rate is expected to be low, especially during the summer months of 1994-95.

The 1990 Census identified nearly 800 vacant units of rental housing (including both apartment units and single-family structures) in Morrow and Umatilla counties. In addition to these housing units, there are 11 motels that supply about 490 motel rooms in the Hermiston, Umatilla, and Boardman area. There are 20 mobile home parks in the Pendleton, Milton-Freewater, Umatilla, and Hermiston area, with seven RV/mobile home parks in the Hermiston area alone. All are within 70 km (45 miles) of the City Boardman. According to the Electric Power Research Institute (EPRI), which studied socioeconomic impacts from power plant construction and operation, including the Boardman power plant, construction workers frequently commute up to 97 km (60 miles) daily to project sites.

The City Manager of Boardman believes the 200-person construction workforce would create no problems for the City of Boardman. Mobile home parks and motels in the City, and the City itself, have been preparing for the influx of construction workers. (Palmer, 1993.)

Impact on Essential Government Services - Cogeneration Plant

Law Enforcement - Although the proposed project would likely increase the demand for law enforcement services over the life of the project, the Sheriff's Office does not feel this project alone would cause the county to hire additional law enforcement personnel (Morrow County Sheriff's Office, August 1993). Additional property tax revenue expected to be apportioned to the County Sheriff's Office from this project should offset any added costs caused by the proposed project.

Fire Protection - The facility would be designed to meet the code requirements of the UBC, as amended, by the state of Oregon and the National Fire Protection Association (NFPA) Standards. In addition, each gas turbine generator enclosure is protected by a self-contained, low pressure, CO_2 fire protection system. Various sensors would be provided as part of the system to automatically actuate the CO_2 fire protection system. An existing 7,600 m^3 (2 million gal.) water tank about 1 km (0.6 mile) south of the proposed site would also be available for fire suppression.

The permanent on-site work force would be trained in hazardous materials training, as are Boardman Rural Fire Protection District personnel (PGE, 1993).

Water Service - The Port will serve the water needs of the Coyote Springs Project from existing permitted wells. The Port estimates that there is approximately 3.8 m^3/m (1,000 gpm) of undedicated capacity available. The City of Boardman will supply up to 7.6 m^3/m (2,000 gpm) of unused capacity to the Port of Morrow for delivery to Coyote Springs. The City of Boardman has a water right for 61 m^3/m (16,000 gpm) of which only 25 m^3/m (6,600 gpm) is reported to be developed. Thus, the water service capability of the Port and the City of Boardman should not be adversely impacted by Coyote Springs.

Sewer Service - The proposed project is expected to generate about 33 m^3 (8,640 gal.) of sanitary wastewater per day into the City of Boardman's sewage treatment facility. (PGE, 1993.) Wastewater would flow through a 50-cm (20-inch) industrial sewer pipe just south of the proposed plant site. According to the City Manager, the sewer line and treatment facility are sufficiently sized to handle the sanitary wastewater that would be generated by the proposed plant. The City's sewage treatment facility is currently processing about 1136 m^3 (300,000 gal.) per day, with a capacity of 1520 m^3 (400,000 gal.) per day. The additional sanitary wastewater would not adversely impact the City's sewage treatment facility.

Sanitary waste generated during construction of the proposed project would be discharged into chemical facilities. These portable units would be pumped out periodically by licensed contractors into transport vehicles.

Education/Schools - The proposed project would likely impact the Morrow County School District by increasing student enrollment. The school district has recently completed a study that revealed an annual cost increase of $4,500 (in 1993 dollars) for each student added to the existing student enrollment within the district. Because the proposed plant would create an added 20-30 permanent new jobs in the area, not all filled with members of the Morrow County-Umatilla County labor force, it is likely a portion of the new residents would create an increase in the existing student enrollment, and increase district costs.

Because the proposed project would generate a minimum of an additional $750,000 in property tax revenue (in 1993 dollars) to the County-wide school district each year, the proposed project would need to impact the school district by more than 165 students before it would negatively impact the school district’s budget (166 @ $4500 = $747,000).

If at least half of the new hires come from outside the Umatilla-Morrow County area, the in-migrants would need to impact the school district with more than an average of eleven students per household (15 x 11 = 165) to create a negative financial burden on the school district. This is unlikely. The proposed project would likely have a beneficial impact on the school district, and the state. Because the state has the responsibility of making up budget shortfalls experienced by school districts across the state, the state would also benefit by the proposed project because its financial responsibility would likely be less.

Library Services - The proposed project would have an impact on the demand for library services offered by the two libraries within the Oregon Trail Library District. The district presently employs four part-time employees, and a full-time director. While the proposed project alone would likely not create the need to hire additional library staff, the additional growth from a portion of the new employees who would relocate to the local area would put an increased demand on library services. This demand, along with the increased demand from growth that would occur because of the plant, would likely create the need for either a new position or an increase in hours worked by existing staff (Oregon Trail Library, August 1993).

The increased property tax revenue received by the library district would likely more than offset any costs incurred by the library as a result of the proposed project. No negative impacts to the library district are anticipated.

Health Care - Health facilities in the local area are sufficiently staffed to handle any medical needs that may arise both for short-term construction personnel and for the increase in the resident population from the proposed project.

Solid Waste Disposal - The proposed plant is expected to generate about 275 kg (600 lb) of solid waste per month. This amount should not create a burden on the Finley Butte Landfill.

Impacts to Other Government Services - Other government services, such as maintenance of the County road system, vector control and the cemetery district, would receive tax revenue that would likely offset any increased costs in services. Though the proposed plant site is outside the City of Boardman, Morrow County government shares tax revenues received with other affected jurisdictions. According to the EPRI study mentioned previously on the socioeconomic impacts from 12 power plants, including the Boardman coal-fired power plant, impacts from the Boardman power plant have been minimal. Some impacts to the school district and to county roads were mentioned, but the report stated that the county road system was in poor repair prior to construction of the power plant and a bond issue had been recently passed to construct two new schools and to expand others within the District (EPRI, 1982).

Impacts to Columbia River Hydroelectric Energy Production and BPA Rates

Reduced Energy Production - It is estimated that the Coyote Springs water withdrawal of 0.17 m^3/s (6 cfs) would have produced 1,000,000 kilowatt hours of electricity annually if allowed to remain in the Columbia River. Assuming the other proposed turbine generators are built and have an equivalent effect, 3,000,000 kilowatt hours of generating capability would be foregone.

Rate Impact - The average value of the lost energy production (1,000,000 kilowatt hours) is assumed to be 60 mills based on 1993 replacement costs. At this rate annual lost revenues would be $60,000. BPA would charge PGE $3-4 million annually for wheeling power from each of the two Coyote Springs units. Thus the Coyote Springs Plant would have a positive impact on rates. BPA uses the following rule of thumb to calculate the impact of expenditures and income on rates: each $100 million dollar change in annual costs or revenues will contribute one mill to BPA's rates. Neither a $60,000 reduction in revenues nor a $6-8 million increase in revenues would have a discernible effect on BPA rates.

Health and Safety Impacts - Cogeneration Plant

Air Emission Impacts to Public Health - The extent and magnitude of toxic air pollutants being released to the atmosphere from the plant were evaluated by Chester Environmental (see pages 5-15-16). Results are summarized in Tables 5-2 through 5-4. The plant would exceed the significant emission rates for NO_x, formaldehyde, a suspected human carcinogen, and ammonia, a non-carcinogenic pollutant. Pollutants exceeding the significant emission rate were modeled for ambient impact. Ambient concentrations of these pollutants pose no human health risks. Modeled ambient impacts of these pollutants are presented in Map 11.

Toxic or Hazardous Materials - A variety of toxic or hazardous materials will be used at the Coyote Springs Plant. A SPCC Plan will be prepared 90 days prior to beginning operation of the plant (PGE, 1994). The following hazardous wastes are expected to be produced from the project:

- Used lead acid batteries
- Spent Selective Catalytic Reduction (SCR) Catalyst
- Oily rags, oil absorbent materials
- Used hydraulic fluids
- Boiler cleaning waste
- Waste oil

Used batteries and spent SCR catalyst are only produced when the equipment has served its useful life and requires replacement. Batteries are used as a source of backup power for plant system controls and safety-related equipment functions. Typical battery life is expected to range from 10-15 years. Used batteries would be shipped to vendor recycling facilities for recycling to minimize the final amount of waste materials requiring disposal at a hazardous waste disposal site.

SCR catalytic systems are used to convert NO_x in the gas turbine exhaust into nitrogen and water vapor. The catalyst system contains heavy metals that are considered hazardous materials. SCR catalysts would be shipped to a hazardous waste disposal facility. The amount of waste catalyst materials generated would be minimized by using clean-burning natural gas and through proper operation and maintenance of system components.

Oily rags and oil absorbent materials would be generated if and when oil spills occur. The plant would be operated and maintained according to rigid written operations and maintenance procedures by qualified and properly trained personnel, which would minimize the potential for oil material spills.

Relatively small quantities of used hydraulic fluids (less than 19 liters [5 gal.] per day) occur on an intermittent basis from routine maintenance and operation functions. These would be stored on-site for periods less than 90 days and periodically shipped to an oil recycling facility.

Following mechanical installation of the boilers, they would be chemically cleaned internally prior to start-up. The cleaning solution would dissolve metallic and other debris created during construction. Boiler cleaning waste would be classified as hazardous. The estimated 152 m^3 (40,000 gal.) of waste solution would be shipped off-site to a hazardous waste disposal facility. This is a one-time waste stream associated with boiler construction.

Waste oil would be generated at the facility from various equipment and plant operations. Sources of waste oil include turbine lube oil system waste oil (oil changes at major overhaul maintenance periods), drains from the natural gas knockout drums, and plant oil/water separators (equipment drains). Only a small amount of waste oil is produced at the plant. Most waste oil comes from maintenance oil changes from the gas turbine and steam turbine generators. Waste oil would be collected in a single underground 23 m^3 (6,000 gal.) storage tank. This size tank would hold a complete lube oil system drained from one of the gas turbine generators. The waste oil would be pumped out by tank truck and trucked off-site to an approved recycling and disposal facility. The underground tank would be of fiberglass double-wall construction to provide corrosion protection and secondary containment. Leakage monitoring would also be provided. (See Tables 3-2 and 3-3 for materials used and stored on-site.)

Electric or Magnetic Fields - The proposed plant would produce some levels of electric and magnetic fields within the plant. Workers in that plant would be exposed to these fields during the course of performing their jobs. Exposure and level duration are unknown.

Because scientific evidence about EMF has not established a cause-and-effect relationship between electric or magnetic fields and adverse health effects, specific health risks, or specific potential level of disease related to exposure to EMF are unknown.

Electric and magnetic field effects are discussed at length under the transmission line impacts discussion on Page 5-38 and in Appendix B.

Visual and Aesthetic Impacts - Cogeneration Plant

Section 4.1.6 discussed the project, impact area visual characteristics, land use designations (visually sensitive), and viewers potentially exposed (see Table 4-7). The following discussion identifies the compatibility or impact of the proposed cogeneration plan with these characteristics. Visual impact findings are based on a field evaluation of visually sensitive sites, and computer-assisted viewshed analysis. Table 5-8 identifies the distance from which the project is seen and the significance of visual impact. Map 9 illustrates the sensitive viewer observation areas which are located in the viewshed . Unless views are blocked by vegetation all areas in the viewshed would see at least part of the project.

The significance of impact (high, moderate, low or none) was determined based on the sensitivity of viewing activity, the degree of visibility (distance), the significance of the viewing area (designated, protected) and the number or type of viewers. The analysis was based on the visibility of the most significant elements of the project, the main turbine built and emissions stacks and transmission towers. The analysis was completed based on the assumption that strobe lights would be put on the stacks to meet FAA requirements.

The methodology used for determining impact significance was interpreted from the threshold distances proposed to BPA in the 1976 study *Measuring the Visibility of H.V. Transmission Facilities in the Pacific Northwest* and the *1986 Cape Blanco Wind Farm Feasibility Study Technical Report No. 7 - Visual.* The thresholds distances used were:

High to Moderate Visibility - 2.2 km (1.4 miles) or less
Moderate to Low Visibility - 2.2 - 6.2 km (1.4 to 3.9 miles)
Low Visibility - 6.2 km - 30 km (3.9 to 18.9 miles)

With the exception of the Columbia River, Lake Umatilla, portions of the Umatilla Wildlife Refuge, I-84, nearby residences and Port work areas, Washington State Highway 14, and the Coyote Springs State Wildlife Refuge, the proposed plant would not be visible or would have only low impact significance on any of the key observation areas identified on Table 5-6 and Map 9. The predominant visual features of the facility would be the 55 m and 64 m (180 ft. and 210 ft.) exhaust stacks, associated steam plumes and the new 500-kV transmission towers. On clear days the stacks and transmission towers could be visible from distances as far as 30.6 km (19 miles). However, their visual impact is reduced in significance by the flat terrain surrounding the site and the large number of trees (Russian olive and cottonwood) in the adjacent area. These trees obstruct views from many of the viewer observation areas. The visual impact is also reduced in significance by the many industrial and transmission structures in the area. In particular, the Boardman Chipping Company facility is a visually dominate feature and tends to attract viewer attention.

Table 5-6
Visual Impact Assessment

Viewer Observation Areas	View Distance	Visible (yes/no)	Designation in Land Use Plan	Impact Significance
Boardman Marina Park	2.4 kilometers (1.5 miles)	Yes (partly screened)	Not Designated	Low
Boardman Research Natural Area	1.5 kilometers (.95 miles)	Yes	Protected Area	Low (partly screened)
Boardman Sailboard Beach	4.0-4.8 kilometers (2.5-3.0 miles)	Yes	Not Designated	Low
Cold Springs Reservoir	38.6 kilometers (24 miles)	No	Designated	None
Cold Springs National Wildlife Refuge	38.6 kilometers (24 miles)	No	Protected Area	None
Horn Butte BLM Area of Critical Environmental Concern	28 kilometers (17.4 miles)	Yes	BLM Designated and Protected Area	Low
Coyote Springs State Wildlife Area	2.9 kilometers (1.8 miles)	Yes	Not Designated but Protected Area	Moderate
Hat Rock State Park	38.5 kilometers (23.9 miles)	No	Designated and Protected Area	None
I-84 Rest Stop (east & west-bound)	6 kilometers (3.7 miles)	Yes	Not Designated	Low
Irrigon Marina Park (ODFW)	19 kilometers (11.8 miles)	No	Not Designated	None
Irrigon State Wildlife Area	19 kilometers (11.8 miles)	No	Not Designated or Protected	None
Lake Wallula	30.6+ kilometers (19.+ miles)	No	Designated	None
Lake Umatilla	.5+ kilometers (.3+ miles)	Yes	Designated	Moderate-Low
Lindsay Grassland	16 kilometers (10 miles)	No	Designated	None
McNary Lock and Dam	30.6+ kilometers (19+ miles)	No	Designated	None
Messner Pond	0.1 kilometers (400 feet)	Yes	Not Designated	Moderate
Oregon Trail BLM Area of Critical Environmental Concern (Bucks Corner)	29 kilometers (18 miles)	Yes	BLM Designated and Protected Area	Low (can see only stack and steam plume)
Power City Wildlife Area	30.9 kilometers (19.2 miles)	No	Not Designated or Protected	None
Riverside High School	1.6 kilometers (1 mile)	Yes (only stack and plume visible)	Not Designated	Low
Travelers on I-84	0.9+ kilometers (.55+ miles)	Yes	Not Designated	High
Umatilla County Scenic-Historic Road	30+ kilometers (18+ miles)	Yes (only stack and plume visible)	Designated	Low-None
Umatilla National Wildlife Refuge	2.4-3.2 kilometers (1.5-2.0 miles)	Yes	Protected Area	Moderate-Low

During certain times of the year when the relative humidity is high, steam plumes may be visible from the cooling tower, HRSG stack, and auxiliary boiler stack. Plumes would be 107-122 m (350-400 ft.) high. Since the proposed facility is in a semi-arid area, the ambient relative humidity is generally low and plumes would only be visible when temperatures fall below freezing. Plumes would be seen until the temperature of the plume declines to the ambient air temperature.

The views of the facility are particularly open from the Columbia River, and the Washington shoreline. There are several scenic viewpoints, boat ramps and wildlife refuge access roads on the Washington side of the river. They would expose viewers to an open panorama of the site. This views across the river and Umatilla Wildlife Refuge would be the most incompatible. The proposed facility would increase the industrial appearance of the wildlife refuge’s natural vistas. However, this impact would be somewhat reduced due to the views of the Boardman Coal Plant and stack, which are visible in the background. The plant site would also be highly visible from I-84. Average daily traffic on I-84, 500 m (1,600 ft.) west of the Boardman interchange, totals over 9,450 vehicles a day (1991). The unimproved appearance of the Port property would be accented by the new plant and associated transmission lines. This could leave a negative visual impression to the public traveling on I-84. The exhaust stacks and steam plumes would attract attention and be highly visible.

Figures 4-4, 4-6, and 4-8 (see Section 4) are simulations of what the plant would look like from key vantage points. These photographs were included in PGE's site application and were taken from I-84 south, east, and west of the proposed site. The view from the Boardman residential area should be similar to the views shown on Figures 4-6 and 4-7.

Mitigation - PGE indicated that topographic screening was not practical due to the flat terrain surrounding the site. PGE's conclusions were based on topography or vegetation not being strong visual elements in the site area. However, PGE has proposed several mitigation measures to be used to minimize the visual impact of the plant:

- Paint buildings and exhaust stacks in neutral shades to minimize visual impacts.
- Minimize exterior lighting at night. The minimum number of lights would be used as required by safety standards. The FAA may require aircraft warning lights on the tallest stacks. There is no way to minimize the visual impacts of strobe lights.
- Use native plant materials to enhance the appearance of the site.

Noise Impacts - Cogeneration Plant

Operational Noise - Future noise levels for the plant were calculated by Chester Environmental using a widely used and accepted acoustic computer program called "Noisecalc." Future noise was then compared with DEQ's nighttime standard of 50 dBA for residential sites and with existing noise levels at these sites. DEQ's industrial noise standard takes into consideration existing noise levels at industrial sites when evaluating future industrial noise. Its standard is

either the maximum existing noise level or the speech interference criteria of 55 dBA. The results of the noise analysis are presented in Table 5-7. Locations of noise recordings are shown on Map 4 (follows page 4-2).

As Table 5-7 shows, DEQ noise standards are met at each of the noise analysis sites. Several of the noise analysis sites (2,4, and 5) already experience high noise levels. The cogeneration plant would not worsen this condition. It would be possible to hear the turbine generators' high frequency tonal sound at some of the nearest occupied sites. During east to northeast wind conditions, some locations may experience downwind refraction of sound causing short-term noise increases of up to 10 dBA.

Table 5-7
Future Nighttime Noise Levels

Site	Site Type	Existing Noise (L-10)	Predicted Noise (L-10)	DEQ Standard (L-10)
1	Wildlife Area	51 dBA	57 dBA	62 dBA
2	Industrial Site	51 dBA	44 dBA	55 dBA
3	Residential	50 dBA	39 dBA	55 dBA
4	Industrial Site	56 dBA	41 dBA	55 dBA
5	Residential	57 dBA	31 dBA	50 dBA
6	Residential	50 dBA	30 dBA	55 dBA
		Existing Noise (L-50)	**Predicted Noise (L-50)**	**DEQ Standard (L-50)**
1	Wildlife Area	36 dBA	57 dBA	62 dBA
2	Industrial Site	46 dBA	44 dBA	50 dBA
3	Residential	44 dBA	39dBA	50 dBA
4	Industrial Site	50 dBA	41 dBA	50 dBA
5	Residential	56 dBA	30 dBA	50 dBA
6	Residential	48 dBA	30 dBA	50 dBA

Source: Chester Environmental.

Construction Noise - The exact mix of construction equipment to be used at the plant is unknown. However, experience suggests that certain types of equipment would be used for this type of facility. Table 5-8 lists construction equipment expected to be used to build the plant and the noise levels created by each. The number of each machine used is based on EPA estimates. The usage factor is an estimate of how much time a piece of equipment would be used in an 8-hour work day (expressed as a percentage).

Table 5-8
Construction Equipment Noise Levels

Equipment Type	Quantity	Noise at 50 ft. (dBA)	Usage %
Bulldozer	2	80	40
Road Grader	1	78	40
Back Hoe	1	85	20
Crane	1	84	20
Dump Truck	3	85	40
Paving Machine	1	85	10
Paving Roller	1	85	10
Concrete Truck	2	86	20
Air Compressor	2	81	100
Water Pump	2	76	100

Based on the equipment noise levels at 15 m (50 ft.) and the individual usage factor, a composite noise level at 15 m (50 ft.) of 89 dBA (L_{50}) was calculated by Chester Environmental. This noise level would occur up to 4 hours. Taking into account noise reduction due to distance, noise at Messner Pond (the nearest sensitive site), would be 65 dBA, which is less than DEQ's allowable noise maximum of 68 dBA. Construction noise at the nearest residential site (Site 5) would be under the existing industrial ambient noise, and would be inaudible at Site 3.

Cultural Resource Impacts - Cogeneration Plant

The proposed plant would not be on or within any known historic, cultural, and/or archeological resources. However, site-specific surveys have been performed to check for the presence of historic, cultural, and archeological resources, and provide for any needed protection, recovery, or avoidance. A draft of the survey report is included in PGE's *Application for Site Certificate*.

Protected Resource Impacts - Cogeneration Plant

No impacts to other protected resources are anticipated from the proposed project. The City of Boardman has defined a wellhead protection zone and is developing an Ordinance designed to regulate land use development to protect their drinking water supply. The City of Boardman is confident that PGE will protect the wellhead area.

5.1.2 Power Integration Impacts

Impacts predicted to occur from power integration facilities are summarized in Table 5-9. Narrative descriptions of predicted impacts are provided below.

Land Use Impacts - Power Integration

Construction of the proposed transmission line would alter the land use within the right-of-way from vacant and agricultural to industrial. The proposed transmission line has been sited on land that has been zoned PI (Port Industrial) and MG (General Industrial). Transmission lines are an allowed use in the PI Zone within Morrow County, however, they are not allowed outright in the MG Zone. To site a transmission line in the MG Zone within Morrow County, PGE first needs to obtain a variance from the County to allow this use. The County Planning Department would process the permit quickly once it is received (Seeger, 1993).

The transmission line would parallel the Port access road as it enters/exists the proposed plant over approximately 900 m (1,000 yards). The transmission line would then pass over Columbia Avenue before turning southeast for approximately the same distance before tapping into the existing McNary-Slatt 500-kV transmission line. The applicant would need to obtain a conditional use permit from the county before stringing a transmission line over a public right-of-way. The conditional use permit would specify the minimum clearances required for such use.

Land use restrictions are necessary for land contained within transmission line rights-of-way. Such restrictions would be contained in the easement between PGE and BPA and the Port of Morrow. These restrictions would identify what uses are not allowed within the right-of-way. For example, no structures may be built and no flammable liquids may be stored within a BPA transmission line right-of-way.

Construction of the proposed transmission line across the irrigated agricultural field (circle 53) may cause noxious weeds to spread within the existing field and/or within nearby fields.

Mitigation - PGE would obtain a variance from the county to allow construction of the proposed transmission line in the MG Zone.

PGE would obtain a conditional use permit from the county before stringing a transmission line across Columbia Avenue, a public right-of-way.

PGE would acquire the appropriate easement rights (meeting all BPA easement requirements) from the landowner prior to construction. PGE would assign these rights to BPA.

Noxious weed survey would be undertaken by a qualified individual(s) prior to any earth moving activities taking place.

Natural Resource Impacts - Power Integration

Soils and Geology - Minimal impacts to soils are expected from construction of the substation and tap lines. Determination of soil impacts are based on soil characteristics, topography, vegetation, and presence of erosion elements including water and wind. The proposed project site is nearly flat, dry, and sparsely vegetated. Water erosion is expected to be minimal. Vegetation must be replaced to avoid wind erosion.

Transmission towers would be supported on drilled shaft foundations and the substation equipment would be supported on spread footing foundations. Operating the transmission line and substation would have no impact on site stability.

Water - The substation and transmission line structure locations avoid surface water features. The construction period would be the only period in which water impacts might be caused by power integration facilities. Oregon requires SWPP Plans for construction sites that exceed 2 ha (5 acres), such as the Coyote Springs Plant. This plan would define techniques that would be used to prevent pollution from entering aquatic systems, and prevent wind or water erosion, and ensure that transmission facilities would not adversely affect water resources.

Air Quality - The typically high electric field strength of 500-kV transmission lines causes a breakdown of air at the surface of the conductors called corona. Corona has a popping sound, which is most easily heard during rain storms. When corona occurs, small amounts of ozone and NO_x gases are released. These substances are released in such small quantities that they are generally too small to be measured or to have any significant effects on humans, plants or animals.

Impact Table - Coyote Springs Power Integration (Substation and Transmission Line)

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
WATER				
Resulting from Construction Activities				
Messner Pond	Unlikely	None	NPDES Requirements	DEQ 1200 C
Columbia River	Unlikely	None	NPDES Requirements	DEQ 1200 C
Unnamed irrigation pond	Certain	Slight	NPDES Requirements	DEQ 1200 C
Resulting from Facility Operation				
Degradation of water quality	Unlikely	Slight	City of Boardman's sewa treatment facility	None
Lowering of water table in d aquifer	Possible	Slight	None	(Water Resourc Permit)
Spills of fuel or other hazard materials	Unlikely	Slight	Fulfill requirements of RCRA	None
Fisheries	Unlikely	Slight	Denial of new wells ir alluvial aquifer	Water Resource Permit
VEGETATION				
Habitat disturbance	Slight	None	Recontouring and revegetation	None
Wetland vegetation disturbance	Likely	Moderate	Recontouring and Revegetation	None
Sensitive plant species	Unlikely	Unlikely	None	None
WILDLIFE				
Fauna				
Mortality of individuals	Unlikely	Localized	None	None
Temporary displacement	Unlikely	Localized	None	None
Stress in crucial life cycle times	Unlikely	Localized	None	None
Wildlife Habitat				
Wildlife habitat impact	Minimal	Localized	Revegetation	None
FISH				
Mortality/displacement	Unlikely	Localized	None	None
SPECIAL STATUS SPECIES				
None found in project area	None	None	None	None
THREATENED AND ENDANGERED SPECIES (Federally listed)				
Plants				
None found in project area	None	None	None	None

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
THREATENED AND ENDANGERED SPECIES (Federally listed) Cont.				
Wildlife				
Peregrine falcon	Unlikely	Localized durir construction	None	None
Bald eagle	Unlikely	Localized durir construction	None	None
Fish				
Salmon River fall chinook salmon	None	None	None	None
Salmon River spring/summe chinook salmon	None	None	None	None
Salmon River sockeye salmon	None	None	None	None
GEOLOGIC HAZARDS				
Seismic Hazards (Possibilities ground shaking, fault offset, liquefaction, or seismicall induced waves and flooding co affect the integrity of the f	Possible	Project Area	Construct facilities acco to the Uniform Building Code, and the appropriat importance factor for essential and hazardous facilities.	Building Perm
Floodplains	Unlikely	Slight	None	None
SOIL				
Wind erosion due to removal vegetation	Likely	Localized, sho term	NPDES Requirements	DEQ 1200 C
Water erosion due to removal vegetation	Unlikely	Localized, sho term	NPDES Requirements	DEQ 1200 C
LAND USE				
Land use within the right-of will be altered from vacant a agricultural to industrial us	Certain	Slight	None	None
Transmission lines in the Ger Industrial zone of Morrow Cou require a variance.	Certain	Localized	Project developers will s a variance..	Variance
The transmission line will cro public right-of-way.	Certain	Localized	As required in permit	Conditional Use Permit
The transmission line will r certain uses within the righ way.	Certain	Localized	Landowners will be compensated for easeme	None

Table 5-9
Impact Table - Coyote Springs Power Integration (Substation and Transmission Line)

Impact Table - Coyote Springs Power Integration (Substation and Transmission Line)

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
LAND USE (Cont.)				
Construction of the transmis line may cause an infestation noxious weeds in existing nea agricultural fields.	Likely	Localized	A noxious weed survey be conducted by a qualifi individual(s) prior to a construction activities t place. All constructio vehicles will be washe prior to entering and bef leaving construction are	None
CULTURAL RESOURCES				
Historic, cultural and archeol resources	Unlikely	None	Site-specific survey	None
SOCIOECONOMIC				
Construction of proposed pro will increase the demand f temporary housing.	Likely	Local area	None	None
Construction and operation proposed project will increa employment in local area.	Likely	Local area	None-Positive impact	None
RECREATION				
Local recreation sites	Unlikely	None	None	None
VISUAL AND AESTHETIC RESOURCES				
Nearby residences, Washingto Highway 14, I-84, Columbia R portions of the Umatilla Wi Refuge, and the Coyote Spring State Wildlife Refuge.	Likely	Low	Structures will be loca parallel to existing stru if possible. Insulator a tower colors will be mat between lines, etc. Measures will be used t reduce visibility and glar new conductors and towe	None
Other key observation points	Unlikely	Slight	(1) Paint buildings in ne shades to minimize visu impacts. (2) Minimize t amount of exterior lightin night. (3) Use native mat landscaping.	None
PROTECTED RESOURCES				
Oregon DOE designated Protected Resources	Unlikely	Slight	None	None
PUBLIC HEALTH AND SAFETY				
Toxic and hazardous waste (Substation)	Unlikely	Localized	Requirements of SPCC Pl pursuant to the Clean Wa Act	None
Electric fields	Likely	Localized	Safety standards to pre accidental shock.	None
Magnetic fields	Likely	Unknown	Line design to reduce fields.	None

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
NOISE				
Construction noise	Likely	Moderate, Short-term	None	None
Operation noise (line and substation)	Likely	Localized, insignificant d to existing noi	Special design of transmission lines and transformers to meet n standards.	None
AIR QUALITY				
Pollutants from constructi equipment	Likely	Slight	None	None
Pollutants released during operation	Likely	Slight	None	None
Fugitive dust	Likely	Slight	Water area as needed.	None

Table 5-9 (continued)
Impact Table - Coyote Springs Power Integration (Substation and Transmission Line)

Fish and Wildlife Impacts - Power Integration

Fisheries - No fisheries impacts would occur from construction of the electrical transmission line.

Wildlife - Along the electrical transmission line corridor, temporary impacts to wildlife habitat would result from equipment operation to access the transmission tower construction sites, and minimal permanent loss of habitat would occur at the base of the transmission towers. The effect of this habitat loss on wildlife populations is expected to be minor due to the temporary nature of the impact and the small amount of habitat impacted. No excavation would occur except to construct the footings for the transmission towers. Minor amounts of vegetation would be cleared because most of the electrical transmission line route lacks significant vegetation. The proposed mitigation measure to reestablish vegetation (grasses) would provide habitat in areas presently bare. Also, the erection of the transmission towers may provide new perching and nesting habitat for some avian species (e.g., raptors, western kingbird).

Construction activities along the transmission line could also cause disturbance (visual and auditory) and displacement of wildlife from these areas to adjacent areas. Displacement would be temporary and most wildlife would likely return to the area after construction is complete. The degree of this disturbance would depend on several factors including time of year, duration of disturbance, and the species' sensitivity to disturbance.

Mitigation - Electrocution of raptors is unlikely based on the design specifications of the transmission towers, but modifications would be added if warranted to raptor-proof the transmission towers and minimize electrocutions. Because phase-to-phase and phase-to-ground distances of the 500-kV transmission lines and towers are greater than the wing span of eagles and other large birds, electrocution of these species would not be a concern. If, for some unforeseen reason, an individual tower is determined to be a potential hazard, appropriate mitigation measures would be taken (erection of perch guards or modification of the lines as described in Olendorf, et al., 1981) to eliminate the hazard.

Vegetation/Wetland Impacts - Power Integration

Direct but short-term impacts would occur to upland vegetation during construction of the towers.

Socioeconomic Impacts - Power Integration

Socioeconomic impacts for the power integration facilities are minor and cogeneration plant impacts include power integration facilities.

Public Health and Safety Impacts - Power Integration

Toxic and Hazardous Materials - Minimal amounts of hazardous waste would be generated from routine maintenance procedures performed on substation equipment and lines. Kinds and volume of waste would depend on the maintenance procedure and would be the same as that generated at any electrical substation.

Safety Precautions - Power lines, like electrical wiring, can cause serious electric shocks if certain precautions are not taken. These precautions include building the lines to minimize shock hazard. All BPA lines are designed and constructed in accordance with the ***National Electrical Safety Code (NESC)***. NESC specifies the minimum allowable distances between the lines and the ground or other objects. These requirements determine the edge of the right-of-way and the height of the line, that is, the closest point that houses, other buildings, and vehicles are allowed to the line, to limit electric field effects to acceptable levels.

People must also take certain precautions when working or playing near power lines. It is extremely important that a person not bring anything, such as a TV antenna or irrigation pipe, too close to the lines. BPA provides a free booklet that describes safety precautions for people who live or work near transmission lines (*Living and Working Around High Voltage Power Lines*).

Transmission lines can also induce voltages into objects near the lines. This effect can lead to nuisance shocks if a voltage is induced on something like wire fencing on wood posts insulated from ground. Usually this becomes a problem only with lines of voltages above 230-kV. Should problems develop with either high- or low-voltage lines, they can be corrected by simple grounding techniques. For 500-kV lines, grounding of certain objects near the lines is a routine part of the construction process.

Audible Noise Limits - All new BPA lines are designed and constructed to comply with state noise regulations. The new transmission line would meet Oregon's noise standard, 50 dBA.

Electric and Magnetic Fields - BPA recognizes public concern regarding the possible effects of the electrical properties of transmission lines on public health and safety. These effects include electric shocks, noise and potential long-term health effects. In response to the public concern regarding EMF, BPA has taken these steps:

- Developed Interim Guidelines of EMF. These guidelines name EMF as a major decision factor to be considered in locating and designing new BPA facilities.

- Discouragement of intensive uses of rights-of-way. In 1990, BPA revised its right-of-way management practice. BPA no longer encourages new uses in rights-of-way that would increase human exposure to EMF.

- Exposure Mitigation. BPA was among the first to voluntarily adopt practices to mitigate EMF exposures. This means taking reasonable or practical actions that would keep human exposure to new sources of EMF as low as reasonably available.

All BPA lines and electrical facilities are designed and constructed in accordance with the NESC to minimize electrical shock hazards. New BPA lines are also designed and constructed to comply with Oregon's electric field strength standard of 9 kV/m maximum on the right-of-way. This project would meet this standard.

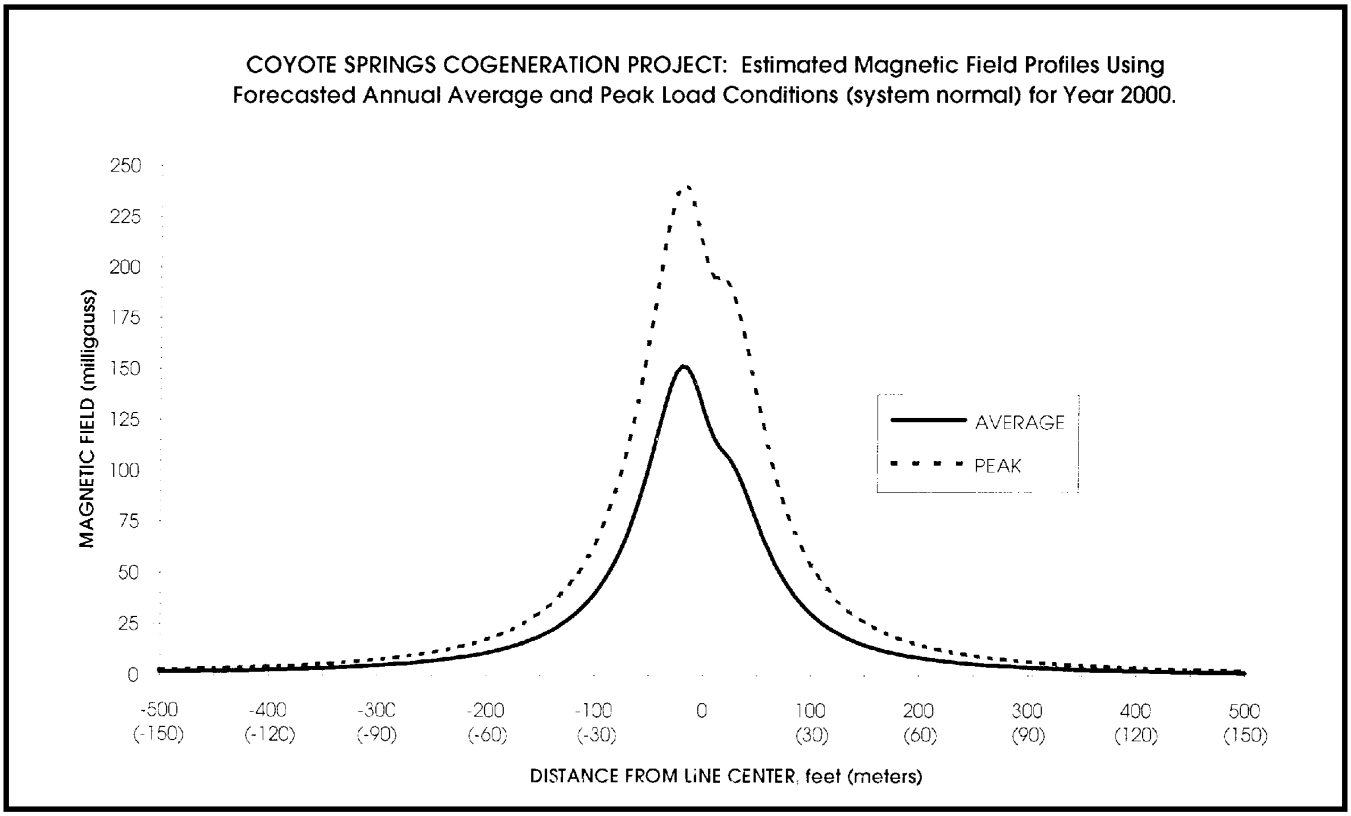
Both electric and magnetic alternating-current (AC) fields induce currents in conducting objects, including people and animals. These currents, even from the largest power lines, are too weak to be felt. However, some scientists believe these currents might be potentially harmful and that long-term exposure should be minimized. Hundreds of studies on electric and magnetic fields have been conducted in the U.S. and other countries. Studies of laboratory animals generally show that these fields have no obvious harmful effects. However, a number of subtle effects of unknown biological significance have been reported in some laboratory studies (Frey, 1993).

Much attention at present is focused on several recent reports suggesting that workers in certain electrical occupations and people living close to power lines have an increased risk of leukemia and other cancers (Sagan, 1991; National Radiological Protection Board, 1992; Oak Ridge Associated Universities Panel, 1992; and Stone, 1992). Most scientific reviews, however, find that the overall evidence is too weak to establish a cause-and-effect relationship between electric or magnetic fields and cancer. For this reason specific health risks related to exposure to EMF are unknown. A review of some of the studies relating to EMF and possible biological and health effects are included in Appendix B.

Significance of EMF Exposures - Adverse health effects, specific health risks, or specific potential levels of disease related to exposure to EMF are unknown. BPA conducts *exposure assessments* of magnetic fields from transmission lines. Exposure assessments are estimates of the field levels that people are potentially exposed to.

Exposure Assessment - In general, magnetic field exposure assessments are performed by calculating field levels in locations where there are potential long-term exposures to people. This is usually done by assessing the number of homes, schools or businesses near the proposed project where magnetic field exposures may be created by the proposed project. Estimated magnetic fields along the proposed transmission line are provided in Figure 5-1. Figure 5-1 shows that magnetic fields drop rapidly as distance from the transmission line increases.

Figure 5-1
EMF Exposure Assessment



The proposed transmission line is within the Port of Morrow Industrial Park, thus EMF exposure to people would be limited. There is only one building employing or housing people close enough to the transmission corridor to potentially experience an increase in magnetic field exposure. The onion processing plant is about 130 m (425-450 ft.) from the centerline of the new transmission line. As Figure 5-1 indicates, this building is estimated to experience 2-3 milligauss magnetic field exposure from the new transmission line. The onion processing plant may already receive some magnetic field exposure from the existing 115-kV line along the Port access road. There are two mobile homes in the area owned by the Port that would be removed. Also, two buildings associated with the concrete batch plant are scheduled for removal because the plant is moving to a new location.

Electrical current levels and EMF exposure levels along other parts of the transmission system may be affected because of this project. Increases or decreases to the magnetic field environment may occur in some areas along the transmission system.

Visual and Aesthetic Impacts - Power Integration

Section 4.1.6 discussed the project, impact area visual characteristics, land use designations (visually sensitive), and viewers potentially exposed. The following discussion identifies the compatibility or impact of the proposed transmission line and tap with these characteristics. Table 5-8 identifies the sensitive observation areas that can see the project (plant facilities and transmission), the distance, and the degree of significance of the visual impact. Figure 5-2 simulates the appearance of the new transmission line as viewed from I-84.

The significance of impact has been determined based on the sensitivity of viewing activity, the degree of visibility (distance), the significance of the viewing area (designated, protected), and the number or type of viewers. The analysis was based on the visibility of the most significant elements of the project, the transmission towers and plant substation. Because of the existing impact and visual dominance of the existing transmission corridors and Boardman Substation, the increased visual impact on viewers or sensitive observation areas beyond 6.3 km (3.9 miles) would be minimal.

The visual impacts of the transmission facilities would occur primarily to the near views. These impacts would occur to people using the Columbia River, portions of the Umatilla Wildlife Refuge, I-84, nearby residences and Port work areas, Messner Pond, Washington Highway 14, and the Coyote Springs State Wildlife Refuge. The proposed transmission line would not be visible or have only low impact significance on any of the key observation areas identified on Table 5-6. The dominant transmission visual features would be the new 500-kV transmission towers and the tap structure that would be within 0.4 km (1/4 mile) of I-84. The proposed transmission line alignment would cross over a vegetated portion of the Messner Pond natural area. Russian olive trees that would be crossed may require clearing, which would increase the visual impact of the project.

Mitigation - Topographic screening is not practical due to the height of the transmission structure and the flat terrain surrounding the site. BPA would use the following measures to minimize the visual impacts of transmission lines structures built for the plan proposed.

- Transmission structures for parallel lines would be designed and located to provide uniformity to the extent practical. That is, structures would be parallel to existing structures. Insulator colors would be matched between existing and new lines.

- The galvanized transmission towers would be specially treated to reduce reflectance and match the existing weatherized transmission towers.

- ***Non-specular*** conductors could be used to reduce visibility between the existing transmission corridor and the generation plant.

- The substation and tap installations would be designed to be aesthetically pleasing. The substation would be landscaped with native plant materials. Substation structures would be painted in a color compatible with the surrounding area.

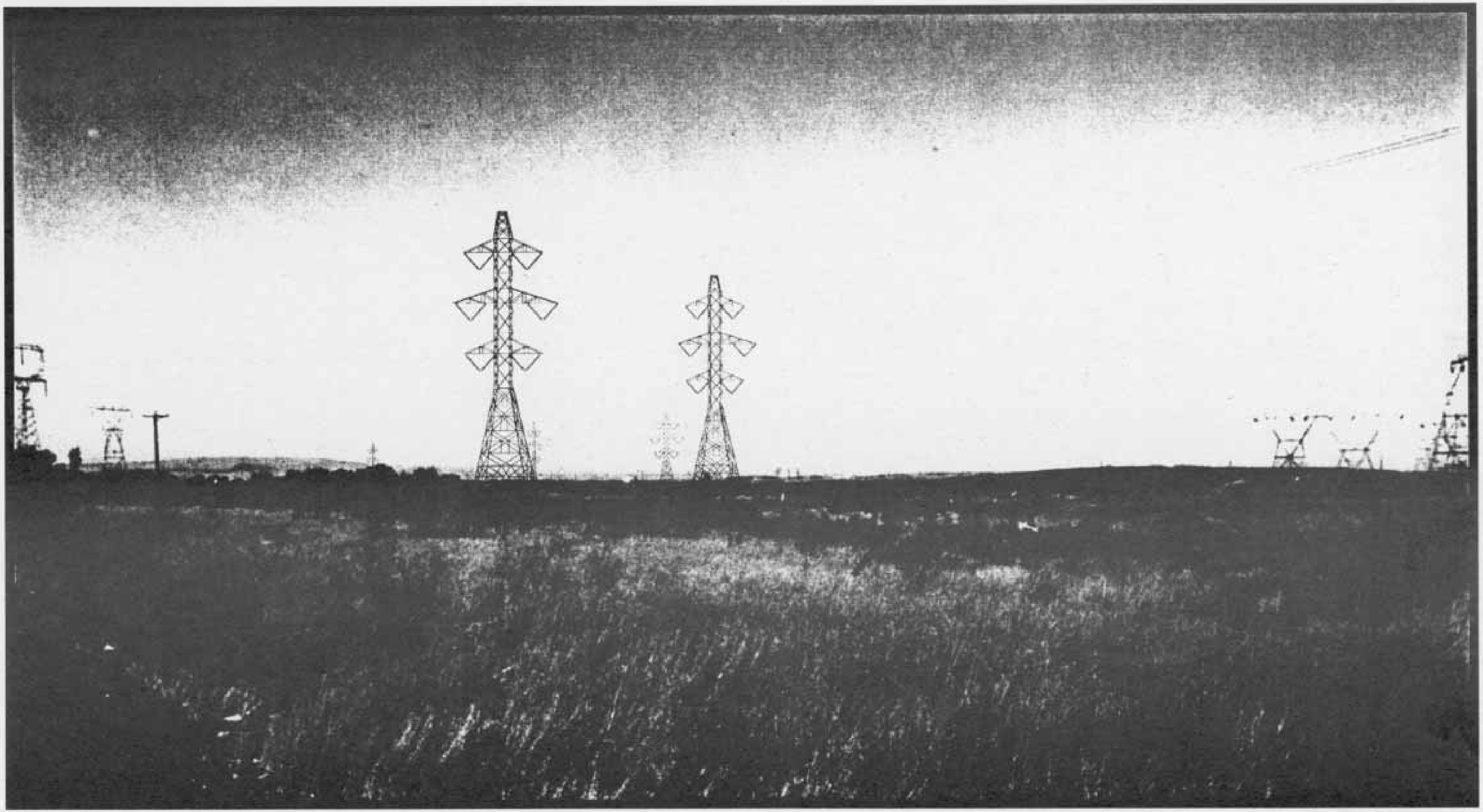


Figure 5-2
Transmission Tap and
Loop Line Simulation

Coyote Springs Cogeneration Plant - Morrow County, Oregon

Noise Impacts - Power Integration

Power transformers within the Coyote Springs substation switchyard would create noise. While old power transformers at times exceed nighttime noise standards, modern transformers are designed to meet the most stringent noise standards.

Transmission lines also create noise through a process called corona activity. An audible popping sound occurs when air breaks down due to the high fields on the surface of the transmission line conductors. During fair weather, 500-kV lines typically create noise levels below normal background (ambient) at the edge of the right-of-way. During heavy precipitation noise levels increase. The use of conductor bundles (2-4 conductors/phase) has considerably reduced transmission line noise levels. A three conductor/phase design will be used for the proposed loop line.

Considering that no noise sensitive properties are near the transmission line route, no significant noise impacts would result from power integration. The proposed transmission loop line will meet the Oregon noise standard in both fair and foul weather conditions.

Cultural Resource Impacts - Power Integration

The proposed 500-kV transmission line and substation would not be on or within any known historic, cultural, and/or archeological resources. Site-specific surveys have been performed to check for the presence of historic, cultural, and archeological resources, and provide for any needed protection, recovery, or avoidance. (See Section 4.1.7.)

Should any archeological, historical, or cultural resources be encountered during construction or operation of the proposed facilities, both ORS 358.920 and 36 CFR 800.11 apply. The former statute prohibits the disturbance or excavation of an archeological site on public lands (including lands owned by port districts) without a permit issued by the state under ORS 390.235. The latter regulation addresses procedures in the event of cultural resource finds made during the course of Federally permitted or licensed undertakings. In pursuant of these legal authorities, if any cultural resource discoveries are made during development or operation of Coyote Springs facilities, all ground-disturbing activity in the vicinity of the find would be halted immediately and the following agencies notified: the Oregon State Historic Preservation Office, FERC, and the Confederated Tribes of the Umatilla Indian Reservation.

ORS 97.745 prohibits the disturbance or removal of Indian burials or graves, whether on public or private lands. Should an Indian burial or possible burials be encountered during construction or operations of the Coyote Springs facilities, all ground-disturbing activity in the vicinity would cease immediately and the following agencies notified: the Oregon State Historic Preservation Office, the Oregon Commission on Indian Services, and the Confederated Tribes of the Umatilla Indian Reservation.

Protected Resource Impacts - Power Integration

Construction and operation of the transmission line is not expected to have a significant adverse impact to Protected Resources. The proposed 500-kV electrical transmission line is about 3.7 km (2.3 miles) from the McCormack unit of the Umatilla National Wildlife Refuge and 1 km (0.6 mile) from the Coyote Springs Wildlife Area.

5.1.3 Coyote Springs Extension Pipeline Impacts

Public distribution of an Environmental Assessment (EA) on PGT's proposed Coyote Springs and Medford Lateral pipelines is planned for released by FERC in the fall of 1994. Impacts reported here and in Table 5-10 are taken from environmental resource reports commissioned by PGT for submittal to FERC in Docket No. CP93-618-000 and CP93-618-001.

Land Use Impacts - Pipeline

Since most of the proposed route is located within or adjacent to existing, previously disturbed right-of-way, construction effects for the pipeline on land use should be minor and insignificant. Traffic along Bombing Range Road will be disrupted by interruptions for short periods due primarily to the precautions for safe movement of equipment or pipe. The crossings of Interstate I-84 and Wilson Road will be bored because of high traffic volumes and requirements by Morrow County Public Works and Oregon Department of Transportation. Traffic will not be disrupted. The West Extension Irrigation Canal would be bored to avoid interruption of water flow.

Minor short-term inconveniences may occur to some property owners because of construction activities. Access to homes and business will be provided at all times. All landowners will be compensated for unforeseen damage to property.

Mitigation - Special safety precautions and traffic control would be implemented during construction along Bombing Range Road. PGT would inspect and maintain the pipeline for the life of the project.

Natural Resource Impacts - Pipeline

Geology

Impacts on geology would be minor and insignificant, and would only occur during grading and excavation of the pipeline trench. With the nearest known fault miles away, seismic ground shaking is not expected to strain the earth surrounding the pipeline. It is possible that shaking could affect the integrity of the pipeline, however welded steel pipelines have good inherent ductility, and potential damage is not probable.

Potential effects to soil could include loss of topsoil, mixing of topsoil and subsoil, compaction, and wind or water erosion. Since the majority of the route is located in existing utility or transportation corridors which are not on lands used for agriculture, the effects would be minimal.

Mitigation - PGT will follow FERC's "Erosion Control, Revegetation, and Maintenance Measures" guidelines. Preconstruction contours will be reestablished to minimize erosion. Topsoil stockpiled during construction will be replaced last. Disturbed areas will be stabilized. The working area will be reseeded during the final cleanup phase of construction, unless property owners prefer otherwise.

Air Quality

Effects on air quality from construction of the pipeline would be temporary, and are not expected to exceed any air quality standards. Dust created as a result of vegetation clearing and disturbances by construction equipment would be minor. No impacts are expected after construction.

Mitigation - Watering of the working area during construction would control dust levels, and revegetating the exposed soil after project completion would provide final stabilization.

Vegetation

Throughout the 30 km (18.5 mile) pipeline route, agriculture and road/utility line maintenance operations have virtually eliminated all tracts of native vegetation. Existing vegetation communities along the route will be disturbed by the construction activities. Disturbance will be limited to the construction period, and will be restricted to within 10 m (35 ft.) or less of the pipeline centerline. Vegetation disturbed will largely consist of disturbed weedy grassland and grazed grassland communities. These impacts are not considered significant as these vegetation communities are common in the area, and are already highly disturbed. No protected sensitive plant species were identified during field surveys along the route.

Mitigation - In spring 1994, plant surveys were repeated because part of the pipeline route has been shifted to the west side of Bombing Range Road. A revegetation plan will be developed as part of the FERC required Erosion Control, Revegetation, and Maintenance Plan. The plan will include at a minimum: plant species to be used for restoration, site preparation, timing of planting or seeding, fertilization, monitoring program, and a contingency program in case of failure. Local soil conservation authorities will be consulted in the preparation of the plan and for the identification and procedures for minimizing effects of noxious weeds.

Fish and Wildlife

No fish or threatened and endangered species are expected to be affected by the construction or operation of the pipeline.

Impact Table - Coyote Springs Pipeline Extension

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
SURFACE WATER				
Erosion of streambanks	Unlikely	Unlikely	NPDES Requirements. Follow guidelines provided by FERC's Wetland and Waterbody Construct and Mitigation Procedures	DEQ 1200 C
Increased sediment transport	Unlikely	Unlikely	(See above)	DEQ 1200 C
Resuspension of toxic contaminants	Unlikely	Unlikely	(See above)	DEQ 1200 C
Spills of fuel or other hazardous fluids	Unlikely	Unlikely	(See above)	DEQ 1200 C
WETLANDS				
Degradation of water quality	None	None	NPDES Requirements (i.e., reseedi disturbed areas, sediment filte watering to control dust, locat staging areas away from wate features, refueling 200 feet fr wetland boundaries). Also see abo	DEQ 1200 C
Chemical releases to groundwater	Unlikely	Small, localized and insignificant	(See above)	DEQ 1200 C
Fisheries and aquatic	None	None	(See above)	None
VEGETATION				
Herbaceous habitat disturbance	Likely	Short-term	Native plant restoration after construction	None
Woody shrub habitat disturbance	Likely	Long-term small acreag	Native plant restoration after construction	None
Wetland vegetation disturbance	None	None	Native plant restoration after construction	None
WILDLIFE				
Fauna				
Mortality of individuals	Likely	Less mobile, dormant species	Surveys of critical habitat, sche construction activities to avoid i	None
Temporary displacement	Likely	Mobile species	(See above)	None
Stress in crucial life cycle times	Likely	Less mobile species	(See above)	None
Wildlife Habitat				
Shrub-steppe	Likely	Conversion to grassland	Reseeding, native plant restorat after construction.	None
Grazing/agriculture	Likely	Disturbance with recover within 2 seasons	(See above)	None
Impact to grassland habitats	Likely	Temporary alteration	(See above)	None
Impact to sandy bitterbrush step habitats	Likely	Cheatgrass replacement	(See above)	None
Indirect impacts to wildlife due increased access	Likely	Slight	None	None
FISH				
None	None	None	Follow guidelines provided by FER Wetland and Waterbody Construct and Mitigation Procedures.	None

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
SPECIAL STATUS SPECIES				
Washington ground squirrel	Likely *	Mortality i occupied burrows are excavated. Loss of habit	Surveys of critical habitats, sche construction activities to avoid i	None
Burrowing owl	Likely *	Mortality i occupied burrows are excavated. Loss of habit	(See above)	None
Pygmy rabbit	Unlikely	Mortality o young or dormant rabbits	(See above)	None
Long-billed curlew	Likely *	Loss of eggs, nest abandonment	(See above)	None
Columbia cress	Unlikely	Slight	None	None
Lawrence's milkvetch	Unlikely	Moderate	None	None
Robinson's onion	Unlikely	Slight	None	None
Thompson's sandwort	Unlikely	Slight	None	None
THREATENED AND ENDANGERED SPECIES				
Plants				
None found	Unlikely	None-slight	Field Survey-Consultation with USFWS	None
Wildlife				
None found	Unlikely	None-slight	Field Survey-Consultation with USFWS	None
Fish				
None	None	None	Field Survey-Consultation with USFWS	None
CULTURAL RESOURCES				
Disturbance of prehistoric and his archeological sites during constru	Unlikely	Unlikely	Cultural resource survey prior construction, consultation with S Tribes, avoidance of identified s excavation and recording of the s avoidance impossible.	None
Destruction of standing buildings structures within the impact area pipeline route.	Unlikely	Unlikely	(See above)	None
Vandalism of sites due to increas access.	Unlikely	Unlikely	(See above)	None

* Unlikely if constructed in non-breeding season

Table 5-10 - Impact Table
Coyote Springs Pipeline Extension

Impact Table - Coyote Springs Pipeline Extension

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
SOCIOECONOMIC				
4 person-years of labor (32 short skilled craft jobs) would be hired fr local area.	Likely	Short-term employment increase	Socioeconomic effects from th pipeline project are not expected t significant. No mitigation is plar	None
12 person years of construction la (100 non-local workers) would temporarily in-migrate to work or pipeline.	Likely	Temporary population increase of 17 persons (families of workers).	(See above)	None
Loss of agricultural income within right-of-way during constructio	Likely	Small acreage impacted fo one season.	(See above)	None
Construction workers would place demand on locally available housin	Likely	52 units of temporary housing needed.	(See above)	None
Minor demands for local services (primarily the road system).	Likely	Minor impact on schools.	(See above)	None
Real property tax revenues would paid after the pipeline is comple	Likely	$181,000 annually	(See above)	None
Pipeline completion makes sever projects (including Coyote Spring Cogeneration Plant) viable.	Likely	Major-positive economic benefits	None	None
GEOLOGY/HAZARDS				
Clearing, grading, trenching, stock of excavated materials would imp topography	Likely	Minimal	Disturbed areas will be graded ar restored to approximate preconstruction conditions. Eros controls will be used at disturbed The pipe design will take into acc seismic conditions for the project	
The proposed pipeline could limit a to exploitable aggregate resourc within the pit mine it crosses	Unlikely	Minor - aggregate supplies in th area are abundant	Compensate owner for loss of income.	None
Geologic hazards could affect th integrity of the pipeline (seismic s or erosion at stream crossings)	Unlikely	Stress to the pipeline and creation of potential wea points.	See Text (No Streams are crossed)	None
SOIL				
Construction resulting in: loss vegetative cover, and topsoil; mixin topsoil with less fertile subso deposition and sedimentation of lo lying lands from increased soil ero soil compaction. Permanent loss soils/productivity.	Likely	Conversion to grassland	Follow guidelines provided by FER Erosion Control, Revegetation, ar Maintenance Plan.	None
LAND USE				
Road crossings could disrupt tra during construction.	Likely	Short-term, minor		
	Unlikely	Short-term	Utilities would be located prior construction.	None
Pipeline storage yards would disr current land uses until the pipelin complete and lands are restored to prior condition.	Unlikely	Short-term	The site selected for pipeline stor currently unused and vacant	

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
LAND USES Cont.				
Clearing and construction of the pi would disrupt current land uses.	Likely	Short-term, temporary	78% of the proposed route is adja to existing, previously disturbed of-way. Landowners would be compensated for losses. Land wo be restored to prior conditions Activities such as grazing and agriculture would resume in rig way.	
Pipeline construction, if overlapping building the power plant, could inconvenience local area resident	Likely	Short-term temporary	Construction will occur over a per about 2 months. Because the perio disruption will be short, no mitiga planned.	None
RECREATION				
The pipeline crosses the Oregon T Construction would have a short-t (about 1 day) impact on trail use	Likely	Short-term minor	Access to trail users would be pro during construction	None
People using Messner Pond for fish or birdwatching could be disrupte during construcion of the pipelin Public access would not be impact	Unlikely	Short-term, minor	None	None
PROTECTED RESOURCES				
Oregon DOE-designated Protected Resources	Unlikely	Slight	None	None
VISUAL AND AESTHETIC RESOURCES				
The pipeline passes through areas slightly altered landscapes for most length. In these areas impacts wou moderate. In the industrial park landscape is highly altered and th pipeline would have low impact.	Likely	Moderate to low	Minimizing clearing to reduce con Stockpile and replace native soils disturbed areas. Restore contours revegetate disturbed areas with r plants.	None
AIR QUALITY AND NOISE				
Air emissions (carbon monoxide, nitrogen oxides, volatile organi compounds, particulate matter and dioxide) from construction of the p would be negligible.	Minimal	Localized and slight	None	None
Fugitive dust emissions would occur result of soil exposure	Minimal	Localized	Limit right-of-way clearing. See mulch to protect soil. Water exp soil during periods of high wind. low velocity equipment.	None
Construction of the pipeline wou increase noise levels.	Likely	Localized	Work will be limited to daytime h Mufflers and quieting devices woul used when needed. Work schedulin to avoid periods of noise annoyan Install temporary or portable no barriers around stationary nois sources, if needed.	None

Table 5-10 - Impact Table (continued)
Coyote Springs Pipeline Extension

Impact Table - Coyote Springs Pipeline Extension

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
SOCIOECONOMIC				
4 person-years of labor (32 short skilled craft jobs) would be hired fr local area.	Likely	Short-term employment increase	Socioeconomic effects from th pipeline project are not expected t significant. No mitigation is plar	None
12 person years of construction la (100 non-local workers) would temporarily in-migrate to work on pipeline.	Likely	Temporary population increase of 17 persons (families o workers).	(See above)	None
Loss of agricultural income within right-of-way during constructio	Likely	Small acreage impacted fo one season.	(See above)	None
Construction workers would place demand on locally available housin	Likely	52 units of temporary housing needed.	(See above)	None
Minor demands for local services (primarily the road system).	Likely	Minor impact on schools.	(See above)	None
Real property tax revenues would paid after the pipeline is comple	Likely	$181,000 annually	(See above)	None
Pipeline completion makes sever projects (including Coyote Spring Cogeneration Plant) viable.	Likely	Major-positive economic benefits	None	None
GEOLOGY/HAZARDS				
Clearing, grading, trenching, stock of excavated materials would imp topography	Likely	Minimal	Disturbed areas will be graded ar restored to approximate preconstruction conditions. Eros controls will be used at disturbed The pipe design will take into acc seismic conditions for the project	
The proposed pipeline could limit a to exploitable aggregate resourc within the pit mine it crosses	Unlikely	Minor - aggregate supplies in th area are abundant	Compensate owner for loss of income.	None
Geologic hazards could affect th integrity of the pipeline (seismic s or erosion at stream crossings)	Unlikely	Stress to the pipeline and creation of potential wea points.	See Text (No Streams are crossed)	None
SOIL				
Construction resulting in: loss vegetative cover, and topsoil; mixi topsoil with less fertile subso deposition and sedimentation of lo lying lands from increased soil ero soil compaction. Permanent loss soils/productivity.	Likely	Conversion to grassland	Follow guidelines provided by FER Erosion Control, Revegetation, ar Maintenance Plan.	None
LAND USE				
Road crossings could disrupt tra during construction.	Likely	Short-term, minor		
	Unlikely	Short-term	Utilities would be located prior construction.	None
Pipeline storage yards would disr current land uses until the pipelin complete and lands are restored to prior condition.	Unlikely	Short-term	The site selected for pipeline stor currently unused and vacant	

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
LAND USES Cont.				
Clearing and construction of the pi would disrupt current land uses.	Likely	Short-term, temporary	78% of the proposed route is adja to existing, previously disturbed of-way. Landowners would be compensated for losses. Land wo be restored to prior conditions Activities such as grazing and agriculture would resume in rig way.	
Pipeline construction, if overlapping building the power plant, could inconvenience local area resident	Likely	Short-term temporary	Construction will occur over a per about 2 months. Because the perio disruption will be short, no mitiga planned.	None
RECREATION				
The pipeline crosses the Oregon T Construction would have a short-t (about 1 day) impact on trail use	Likely	Short-term minor	Access to trail users would be pro during construction	None
People using Messner Pond for fish or birdwatching could be disrupte during construcion of the pipelin Public access would not be impact	Unlikely	Short-term, minor	None	None
PROTECTED RESOURCES				
Oregon DOE-designated Protected Resources	Unlikely	Slight	None	None
VISUAL AND AESTHETIC RESOURCES				
The pipeline passes through areas slightly altered landscapes for most length. In these areas impacts wou moderate. In the industrial park landscape is highly altered and th pipeline would have low impact.	Likely	Moderate to low	Minimizing clearing to reduce con Stockpile and replace native soils disturbed areas. Restore contours revegetate disturbed areas with n plants.	None
AIR QUALITY AND NOISE				
Air emissions (carbon monoxide, nitrogen oxides, volatile organic compounds, particulate matter and dioxide) from construction of the p would be negligible.	Minimal	Localized and slight	None	None
Fugitive dust emissions would occur result of soil exposure	Minimal	Localized	Limit right-of-way clearing. See mulch to protect soil. Water expo soil during periods of high wind. low velocity equipment.	None
Construction of the pipeline wou increase noise levels.	Likely	Localized	Work will be limited to daytime h Mufflers and quieting devices woul used when needed. Work schedulin to avoid periods of noise annoyan Install temporary or portable no barriers around stationary nois sources, if needed.	None

Table 5-10 - Impact Table (continued)
Coyote Springs Pipeline Extension

Impact Table - Coyote Springs Pipeline Extension

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
LAND USES Cont.				
Clearing and construction of the pi would disrupt current land uses.	Likely	Short-term, temporary	78% of the proposed route is adja to existing, previously disturbed of-way. Landowners would be compensated for losses. Land wo be restored to prior conditions Activities such as grazing and agriculture would resume in rig way.	
Pipeline construction, if overlapping building the power plant, could inconvenience local area resident	Likely	Short-term temporary	Construction will occur over a per about 2 months. Because the perio disruption will be short, no mitig planned.	None
RECREATION				
The pipeline crosses the Oregon T Construction would have a short-t (about 1 day) impact on trail use	Likely	Short-term minor	The trail would be restored to original condition after pipelin construction.	None
People using Messner Pond for fish or birdwatching could be disrupte during construcion of the pipelin Public access would not be impact	Unlikely	Short-term, minor	None	None
PROTECTED RESOURCES				
Oregon DOE-designated Protected Resources	Unlikely	Slight	None	None
VISUAL AND AESTHETIC RESOURCES				
The pipeline passes through areas slightly altered landscapes for most length. In these areas impacts wou moderate. In the industrial park landscape is highly altered and th pipeline would have low impact.	Likely	Moderate to low	Minimizing clearing to reduce con Stockpile and replace native soils disturbed areas. Restore contours revegetate disturbed areas with n plants.	None
AIR QUALITY AND NOISE				
Air emissions (carbon monoxide, nitrogen oxides, volatile organic compounds, particulate matter and dioxide) from construction of the p would be negligible.	Minimal	Localized and slight	None	None
Fugitive dust emissions would occur result of soil exposure	Minimal	Localized	Limiting right-of-way clearing. S or mulching to protect soil. Wat exposed soil during periods of hi wind. Using low velocity equipm	None

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
AIR QUALITY AND NOISE (Cont.)				
Construction of the pipeline wou increase noise levels.	Likely	Localized	Work will be limited to daytime h Mufflers and quieting devices woul used when needed. Work schedulin to avoid periods of noise annoyan Install temporary or portable no barriers around stationary nois sources, if needed.	None

Table 5-10 (continued)
Impact Table - Coyote Springs Pipeline Extension

The major impact to wildlife will be the temporary disturbance to wildlife habitat, largely consisting of disturbed grassland and grazed grassland. A small amount of shrub-steppe habitat may be impacted. These habitat impacts are not considered significant as they are common in the area, and are already disturbed. There may also be some direct mortality of wildlife in underground burrows or of young birds in ground nests during pipeline construction. This is not considered a significant impact to local populations of common species. Common species are widespread and abundant: mortality from construction would be minor relative to both local populations and normal annual mortality, and losses are expected to be replaced during the following breeding season.

Three sensitive avian species may be impacted by construction of the proposed pipeline: long-billed curlew, grasshopper sparrow, and burrowing owl. All are ground nesting birds whose nests and young could be destroyed if construction occurred during the breeding season in portions of the route where they might nest. The Washington ground squirrel could also be affected if it is using rodent burrows along the route. Other sensitive species were not observed in the project area, were observed outside the area to be impacted, or appropriate habitat was not found in the pipeline route and thus are not expected to be impacted by the project.

Mitigation - In 1994, surveys to determine breeding locations were repeated for long-billed curlews, grasshopper sparrows, burrowing owls, and Washington ground squirrels because part of the pipeline route had been shifted to the west side of Bombing Range Road.

Construction is not anticipated to occur during long-billed curlew, grasshopper sparrow, burrowing owl and Washington ground squirrel breeding season (May to August), in areas where these species have been found breeding. This will prevent destruction of eggs or young in nests.

All mitigations described in the vegetation section will be followed. Revegetation of disturbed areas with native plants will enhance wildlife habitats in the area. Revegetation should take place as soon as possible following disturbance to minimize the impact to wildlife populations and to reestablish wildlife habitats promptly.

Socioeconomic Impacts - Pipeline

Significant socioeconomic benefits are anticipated from the pipeline construction in the form of increased construction-related employment, income, and sales, and increased property tax revenues for Morrow County.

The only negative impact is the possible shortage of temporary housing for in-migrant construction workers due to competition for housing units with the construction workers for the cogeneration plant. Since the period of pipeline construction is only 5 to 6 weeks, this impact is considered minor. The housing shortage could be reduced by doubling up workers in motel rooms and apartments, and the use of recreation vehicles and mobile homes which are typically brought in by transient pipeline construction workers.

Public Health and Safety Impacts - Pipeline

Impacts on public health and safety are not expected. The PGT pipeline would be designed, constructed, operated and maintained in accordance with Department of Transportation Minimum Federal Safety Standards (CFR 49 Part 192).

Noise Impacts - Pipeline

No long-term noise impacts would result from construction of the pipeline. Increased noise levels resulting from construction activities would be localized. Nighttime noise levels normally would be unaffected because work would be limited to daylight hours. Construction activity occurring during the daytime (7:00 a.m. to 10:00 p.m.) is exempt from Oregon noise level requirements. Standard operation and maintenance of the pipeline would not significantly increase noise levels. Noise from blowdown would be temporary and would occur only during emergency situations or planned maintenance activities.

Recreation/Protected Resources/Visual and Aesthetic Impacts - Pipeline

No impacts will occur to recreation or protected resources. Access to the Oregon Trail entrance where it crosses the Boardman Bombing Range will be provided for hikers during construction.

Impacts will be negligible for visual and aesthetic resources during construction of the pipeline. Visual impacts along the generally flat, open route, are considered short-term because vegetation would recover during the year or two after construction. The revegetation plan mentioned previously will augment restoration of the right-of-way and working area.

Because it would be buried, the pipeline will not be visible for the entire length of the route. Only identification markers spaced at varying intervals would be evident. Above ground facilities which include the meter station and mainline valve would be located at the proposed cogeneration plant, and would have no adverse effect of the site. The mainline valve at the mainline system connection would have no visual effect on the area.

Cultural Resources Impacts - Pipeline

Intensive cultural resource field surveys were performed along the route, and no prehistoric or significant historic resources were found. Twelve historic resources were identified, only one of which was recommended as significant (the West Extension Irrigation Canal). Additionally,

investigation of the Oregon Trail crossing indicated that the trail segment is unrecognizable as a result of irrigation systems' construction and agricultural plowing. The segment, therefore, is not recommended as eligible for listing on the National Register. The SHPO, the Bureau of Reclamation, the Navy and the Umatilla were provided the survey results. To date, only the Umatilla have commented.

5.1.4 Cumulative Impacts

The Council on Environmental Quality (CEQ) defines ***cumulative impact*** as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

Within this context, several cumulative impacts are foreseeable.

Global Warming - Cumulative Impacts

The Coyote Springs Plant would release greenhouse gases. Greenhouse gasses reflect infrared radiation back to earth thus preventing heat loss to outer space. Because of this reflective capability greenhouse gases may contribute to global warming.

The proposed Coyote Springs Plant, together with PGE's existing Boardman Coal Plant and proposed cogeneration plants near Hermiston, Oregon would cumulatively emit approximately 15 percent of Oregon's 1990, or 0.04 percent of global human-caused 1990 CO_2 emissions. In spite of these facilities comparatively large CO_2 emissions, it is important to realize that the CO_2 emissions per thousand kWh from new efficient natural gas combustion turbines such as Coyote Springs and the proposed plants near Hermiston, are 40 to 50 percent of those from coal-fired plants. Cogeneration units emit even less if offset emissions from steam boilers are considered.

One mitigating action that has been taken to offset CO_2 emissions is planting trees. Trees use airborne CO_2 to grow. A new policy of the Clinton administration is to grant tax credits to utilities that take actions to offset CO_2 emissions from their generating plants. PGE has not decided to undertake CO_2 offset mitigation at this time.

Transmission Capacity - Cumulative Impacts

Integrating the Coyote Springs Cogeneration Plant over the BPA transmission system would diminish surplus capacity on BPA's McNary-Slatt 500-kV transmission line. Presently, the surplus capacity of this line has been rated at 700-800 MW, which is more than the total output of both Coyote Springs generation units. The proposed Hermiston Generation Plant and the Hermiston Power Plant also intend to use BPA's transmission system. Their combined capacity would be 800-900 MW. If all three proposed plants are built, demands would exceed BPA's existing

transmission system capabilities. Using projected completion dates for these units and assuming all three were integrated, BPA would need to install additional transmission capacity by the year 2000.

BPA has considered how this might be done. The most favorable solution would be to build a new 500-kV transmission line from McNary Substation adjacent to the 345-kV McNary-Ross transmission line to an interconnection with BPA's existing 500-kV Ashe-Marion lines northeast of Crow Butte, Washington. BPA's Ashe-Marion transmission lines were built in the late 1970s to integrate energy from several nuclear power plants proposed at the Hanford Reservation and near Boardman (Pebble Springs Nuclear Plant). Only one nuclear power plant was completed on the Hanford Reservation, which left surplus capacity on the Ashe-Marion 500-kV transmission lines. Tapping these lines in Washington north of Crow Butte would provide a path for power from the proposed cogeneration plants west to the Willamette Valley in Oregon. This option and other ways to expand transmission capacities would be evaluated for environmental impacts before a decision is made.

Groundwater - Cumulative Impacts

To assess the significance of potential present and future incremental impacts due to groundwater pumping, an inventory of groundwater rights has been prepared for both alluvial wells and basalt wells located within 1.6 km (1 mile) of the Coyote Springs Plant, including all Port of Morrow wells (see Table 5-11). The information was obtained from OWRD files and the Port of Morrow. The Port of Morrow controls 93 percent of the total permitted groundwater withdrawals within a mile of the Coyote Springs Plant. This does not include the City of Boardman's appropriation. The City of Boardman has a surface water right for 61 m^3 per minute (16,100 gpm [36 cfs]), of which 25 m^3 per minute (6,600 gpm [14.7 cfs]) is reported to be developed. Although the City of Boardman has a surface water right, some of this appropriation is supplied by groundwater from the alluvial aquifer because the City uses a Ranney Collector next to the Columbia River.

As shown in Table 5-11, 70 percent of the Port's permitted appropriation is from the alluvial aquifer and 30 percent is from the basalt aquifer. The total Coyote Springs Plant demand will make up 22 percent of the total Port-owned alluvial aquifer appropriation. As stated previously, the Coyote Springs Plant demand will not result in an increase in the alluvial aquifer pumping in the area since the wells supplying the project have been used historically by the Port for its other operations. In fact, there will be a net 0.17 m^3/s (4.5 cfs) reduction in pumping during the summer as a result of transferring the water right at the Carlson Sumps from a 6-month agricultural right to a 12-month municipal right. Furthermore, the cooling and blowdown wastewater generated by the Coyote Springs Plant will be reused to irrigate crops at the Port of Morrow land application sites. The Port presently beneficially reuses a total of nearly 3 800 000 m^3 (1 billion gal.) of water per year, which results in significant conservation of water that would otherwise be obtained from the Columbia River or groundwater.

While not directly associated with the Coyote Springs Plant, the Port of Morrow's new basalt well (Port Well # 5) will make up 41 percent 7.6 m^3/s (2,693 gpm) of the total permitted basalt aquifer withdrawals within a mile of the Coyote Springs Plant (Table 5-11). The OWRD has responsibility and authority to review and approve all requests for groundwater appropriations. The review process includes an assessment of whether or not the aquifer can support the additional pumping without injuring senior water rights holders. The OWRD has determined that Port Well #5 will not create unacceptable present or future impacts and has issued a favorable technical review of the Port's application. Further, OWRD has stated that there are sufficient water rights within the Port of Morrow to support the project.

If unacceptable impacts due to pumping are observed in the future, the OWRD has the authority to limit further appropriations and reduce the total pumping demand based on seniority of water rights. This authority has been exercised at the Ordinance Critical Groundwater Area (OCGA). The OWRD is not considering expanding the OCGA.

There is no information that indicates that the proposed groundwater withdrawals for the project would result in unacceptable present or future cumulative impacts. This conclusion is supported by the following:

- The Coyote Springs Plant will derive its water supply from existing permitted shallow aquifer water sources at the Port of Morrow.

- The OWRD has stated that there are sufficient water rights available at the Port to supply the project.

- There will be a net 0.17 m^3/s (6 cfs) reduction in pumping from the alluvial aquifer during the summer months when low flow in the Columbia River is a concern for fish protection reasons.

- OWRD has issued a favorable technical review of the Well #5 permit application.

- The number of groundwater users near the Coyote Springs Plant are limited; the Port controls 93 percent of the groundwater rights within 1.6 km (1 mile) of the project.

- OWRD has the responsibility to monitor future impacts caused by overpumping and will limit further appropriations if it is found that senior water rights holders are being adversely impacted.

Threatened or Endangered Salmon - Cumulative Impacts

In testimony relating to PGE's Application for a Site Certificate before the Oregon EFSC John Pizzimenti, a scientist specializing in studies on fish in regulated rivers, provided the following explanation of how the Coyote Springs Cogeneration Project might impact threatened or endangered salmon; "In theory, the Coyote Springs project could impact fish in the Columbia River in the following four ways:

1. ***Entrainment*** of fish through water withdrawal intakes.
   This does not occur because the water supply is from wells and is not taken directly from the river.

2. Degradation of water quality through land use modification or point source discharge.
   These do not apply because construction and operation permits will require appropriate control measures. There are no planned discharges from the project to the river.

3. Habitat destruction.
   This does not occur because the project is totally away from the river and does not require construction in the river.

4. Reduction in flows of the Columbia River.
   A maximum of 0.17 m^3/s (6 cfs)) will be appropriated to the project through existing water supply wells. These wells rely on aquifer that have connection with the river and thus affect the water budget of the river up to a maximum of 0.17 m^3/s (6 cfs)." (Pizzimenti, 1994)

Thus, the avenue by which cumulative impacts might affect threatened or endangered salmon species is by means of water withdrawals from shallow aquifers bordering the Columbia River. In 1992, Jeff Barry of CH_2M Hill conducted an extensive study of groundwater in the Boardman area in connection with an EPA funded study titled "Wellhead Protection Demonstration Project, Boardman, Oregon." Jeff Barry was hired to help assess the cumulative impact of groundwater withdrawals which has been used to predict cumulative impacts to threatened or endangered Snake River salmon species.

In Appendix C Beak Consultants concluded that the Coyote Springs Project "is not expected to result in direct mortality or disturbance (visual or auditory) to listed species." This conclusion is supported by the testimony of John Pizzimenti before the Oregon EFSC where he concludes "... diminished flows due to the Coyote Springs project are negligible. They will have no effect on the survival or recovery of threatened or endangered fish species."

Table 5-11 was developed by CH_2M Hill and provides an inventory of existing groundwater rights within a 1.6 km (1 mile) zone surrounding the Coyote Springs Plant. The total alluvium

Table 5-11
Inventory of Groundwater Rights
Near the Coyote Springs Cogeneration Project

Well Location (by section)	Owner	Local Name	Distance from Site (ft)	(cfs)	(gpm)	Aquifer	Use	Water Right Status	Permit, or Certificate Number	Well Depth (ft)
T4N R25E 1 ab	Port of Morrow	Farm Well #4	13,000	9.60	4,310	Alluvium	Irrigation	Application	Not available	
T4N R25E 1 bb	Port of Morrow	Farm Well #5	12,000	(This well is part of the above water right application)						
T4N R25E 10 aac	Port of Morrow	Well #4	3,500	1.69	758	Deep basalt	Industrial	Permit	10975	900
T4N R25E 10 abc	Port of Morrow	Toadvin Pond	2,300	6.53	2,929	Alluvium	Irrigation	Permit	10550	
T4N R25E 10 acc	Port of Morrow	Well #1	2,000	3.00	1,346	Deep basalt	Industrial	Permit	7158	685
T4N R25E 10 ada	Port of Morrow	Carlson Sumps 1&2	4,200	2.26	1,013	Alluvium	Municipal	Certificate	51782	
T4N R25E 10 ba	Port of Morrow	Well #3	1,000	2.00	898	Alluvium	Municipal	Certificate	47191	685
T4N R25E 10 bbd	Port of Morrow	Well #2	1,300	1.11	498	Deep basalt	Municipal	Certificate	58866	685
T4N R25E 12 bbc	Port of Morrow	Farm Well #1	4,000	1.60	718	Alluvium	Irrigation	Certificate	57216	71
T4N R25E 11bd	Port of Morrow	Well #5	4,000	6.00	2,693	Deep basalt	Municipal	Application	13408	900
T4N R25E 2 caa	Port of Morrow	Farm Well #3	7,000	1.58	709	Alluvium	Irrigation	Certificate	51822	93
T4N R25E 12 bba	Port of Morrow	Farm Well #2	10,000	2.88	1,293	Alluvium	Irrigation	Certificate	51822	88
T4N R25E 9 acd	Riverview Cemetary		2,000	0.06	27	Deep basalt	Irrigation	Certificate	34385	470
T4N R25E 9 cba	City of Boardman		5,000	1.50	673	Deep basalt	Municipal	Certificate	34275	585
T4N R25E 10 ccb	Homer G. Prichard		2,000	0.60	269	Shallow basalt	Irrigation	Certificate	56159	72
T4N R25E 10 ccb	Homer G. Prichard		2,000	0.28	126	Deep basalt	Irrigation	Certificate	56160	502
T4N R25E 10 dcb	Tallman and Sons		3,000	0.48	215	Shallow basalt	Irrigation	Permit	11026	210
			Total withdrawal:	41.17	18,476					
			Total alluvium withdrawal:	26.45	11,869					
			Total basalt withdrawal:	14.72	6,606					
			Total Port of Morrow withdrawal:	38.25	17,165					
			Proposed cogeneration demand:	5.95	2,668					

cfs = cubic feet per second
gpm = gallons per minute

withdrawal from the 1.6 km (1 mile) zone is 0.17 m^3/s (26.4 cfs). The demand of Coyote Springs 0.17 m^3/s (6 cfs) is included within this total. These withdrawals would not significantly impact flows in the John Day pool of the Columbia River.

When assessing cumulative impacts, reasonably foreseeable future actions are to be evaluated in combination with the proposal. The following future actions are reasonably foreseeable: (1) the Hermiston Generation Project (see page 2-3) would reduce flows in the McNary pool of the Columbia River by about 0.17 m^3/s (6 cfs); (2) the Hermiston Power Project would also reduce flows in the McNary pool of the Columbia River by about 0.17 m^3/s (6 cfs); (3) additional industrial development is likely to occur within the Port of Morrow, however the water demands of such uses is unknown.

BPA, the Bureau of Reclamation and the Army Corps of Engineers are reviewing the operation of 14 Columbia River system hydro projects. A Draft System Operation Review EIS is scheduled for release in late July 1994. Options being considered would drop the level of the John Day pool to minimum irrigation pool level of 80 m (262.5 ft.) or alternatively the minimum operation pool level of 78 m (257 ft.) minimum needed to operate the navigation locks. The John Day Pool would drop 1.5 - 3 m (5-10 ft.) if these options are selected. The outcome of the System Operation Review is considered speculative and thus is not included in the cumulative impact analysis for the Coyote Springs Plant.

Cumulative alluvial aquifer water withdrawals attributed to the Coyote Springs Plant when added to existing and foreseeable future water uses is not expected to jeopardize the continued existence of endangered or threatened Snake River salmon species. If the Coyote Springs Plant, existing withdrawals from the alluvial aquifer, and foreseeable future withdrawals are added together, the cumulative reduction of Columbia River flows due to groundwater withdrawals would be about 1.1 m^3/s (38 cfs). Compared with the spring runoff during juvenile migration in the John Day pool of the Columbia River of 7400 m^3/s- 9800 m^3/s (260,000-343,000 cfs) in 1983, the Coyote Springs Plant withdrawal of 0.17 m^3/s (6 cfs) even when viewed in an incremental and cumulative manner is insignificant. The significance of an incremental 0.17 m^3/s (6 cfs) decrease in flow cumulating to a 1 m^3/s (38 cfs) flow reduction, might be debated. However, in John Pizzimenti's testimony he states; "there is no evidence that mainstream flow is the primary determinant of salmon survival in most years in the Snake and Columbia rivers, and especially in the John Day pool." Thus flows may not be a significant factor in salmon survival.

Regional Energy Resource Needs - Cumulative Impacts

The Coyote Springs Plant, together with the combustion turbine generation projects proposed near Hermiston, if completed, would provide over 1300 aMW of energy. BPA's *1992 Pacific Northwest Loads and Resources Study* projects a 3,425 MW deficit in 2003 based on the medium load forecast. These plants in combination would satisfy a significant portion of the Northwest's forecast energy needs.

The three combustion projects would reduce flows in the Columbia River which reduces the volume of water available to downstream turbine generators. It is estimated that Coyote Springs Plant's water withdrawal of 171 liters (6 cfs) would have produced 1,000,000 kilowatt hours of electricity annually if allowed to remain in the Columbia River. Assuming the other proposed turbine generators are built and have an equivalent effect, 3,000,000 kilowatt hours of generating capability would be foregone. The average value of this energy is assumed to be 60 mills (replacement cost), annual lost revenues would be $180,000.

Compared with the combined output of the three plants (1300 aMW), a 3 aMW loss in energy is not significant. The revenue loss of $180,000 would be offset by BPA wheeling charges to project sponsors. BPA would receive between $6-8 million in annual revenues from PGE if both units are built and wheeled over the BPA transmission system. Similar wheeling charges would accrue from the Hermiston Generation Project. The Hermiston Power Project would provide for BPA loads and thus would not yield wheeling revenues. Annual wheeling revenues would range from $12-16 million and more than offset the lost energy revenues.

Tax Revenues - Cumulative Impacts

Construction of the Coyote Springs Cogeneration Project in Morrow County and the two cogeneration projects proposed for the Hermiston area could offset the tax reduction measures mandated by Oregon's Measure 5 for local governments in the area. The state of Oregon could also benefit, in that the state, under Measure 5, has the responsibility of providing the necessary funding for the local school districts beyond the maximum of $5/$1000 of valuation that can be collected for tax year 1995/96 and beyond.

Housing - Cumulative Impacts

A shortage of temporary housing facilities in the area could result if all three cogeneration projects' peak construction periods occur concurrently. Construction of large-scale cogeneration plants, such as the proposed projects, normally take place over an 18-24 month period. At peak construction of the Coyote Springs Project, an estimated 200 workers would be on-site (Mayson, 1993). At peak construction for the Hermiston Power Project, 250 workers are expected to be employed (Smith, 1993); U.S. Generating Company's Hermiston Generation Project peak employment is expected to be 450 workers (Oregonian, September 1993).

Both PGE and U.S. Generating Company propose to begin construction sometime in 1994. However, the decision to start construction of the Hermiston Power Project is dependent on BPA's need for power. At this time Hermiston Power Project sponsors state construction would begin between 1995 and the year 2000 (Hermiston Power Partnership). If peak construction were to occur simultaneously, more than 900 workers could be working in the area.

While not all construction workers would likely be from outside the local area, most construction workers are likely to seek temporary housing in the local area. A number of these workers may bring dependents with them during project construction, although this figure is not expected to be significant.

Natural Gas Supply - Cumulative Impacts

The source of natural gas for the proposed cogeneration plant is from actively producing gas fields in Alberta and British Columbia, Canada. The number of natural gas wells that would be needed to supply PGE requirements was estimated by PGT. The average total yield of Canadian natural gas wells was divided into the total requirements of the Coyote Springs Plant (41 billion BTUs per day). Using this method, the output of 16 gas wells would be used each year by the Coyote Springs Plant (PGT, 1993). For perspective, 4,000 Canadian gas wells were drilled in 1991 and the total number of wells in Canada number in the hundreds of thousands (PGT, 1992). Thus the Coyote Springs Plant would use only a small amount of gas compared to that available in Canada. The world's proven reserves are expected to last approximately 58 years at the present consumption rate (*Inside Energy/with Federal Lands, 1993*).

5.2 Impacts of the No Action Alternative

The No Action alternative assumes the Coyote Springs Plant is not built. Impacts reported for the proposed Coyote Springs Plant and associated transmission facilities and the pipeline would not occur, at least not to the same extent and in the same locations. If the No Action alternative is chosen, PGE's need to replace energy lost through closing the Trojan Nuclear Power Plant would not be met.

Two similar cogeneration plants are proposed at Hermiston, Oregon. The proximity of BPA's transmission lines to these plants makes wheeling of power over BPA's lines almost certain. Surplus capacity on BPA's transmission lines would still be used under the No Action alternative.

As the need for additional power resources would remain under the No Action alternative, PGE would most probably build a generation plant of similar size and type at a different location. PGE could also acquire an equivalent amount of energy from independent power producers. Either option appears likely, considering that two very similar generation plants have been proposed at Hermiston, Oregon, and energy produced by combustion turbines is cost-effective.

PGE's investment in the Coyote Springs Project would be lost under the No Action alternative, as would the time committed to this proposal. Development of another generation proposal would take several years to reach an equal level of refinement. In the interim, PGE would need to acquire power during periods when demand exceeds their energy resources, as was the case in winter 1992-1993. The cost of power acquired during winter peaks is high, which would increase costs to PGE's customers.

To Chapter 6

6.0 Environmental Consultation, Review, and Permit Requirements

Several Federal laws and administrative procedures must be met by the proposed action. This section lists and briefly describes requirements that may apply to elements of this project, actions taken to assure compliance with these requirements, and the status of consultations or permit applications.

6.1 National Environmental Policy Act

This FEIS was prepared according to NEPA (42 USC 4321 et seq.). NEPA applies to all major Federal actions that may significantly affect the quality of the human environment. BPA will take into account potential environmental consequences and will use all practical means to protect, restore, and enhance the environment.

6.2 Threatened and Endangered Species

The Endangered Species Act (16 USC 1536) provides for conserving threatened and endangered species of fish, wildlife and plants. Federal agencies must ensure proposed actions do not jeopardize the continued existence of any endangered or threatened species, or cause the destruction or adverse modification of their habitat. When conducting any environmental impact analysis for specific projects, agencies must consult with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service and identify practicable alternatives to conserve or enhance such species.

Informal consultation with the USFWS and NMFS pursuant to the Endangered Species Act has been initiated. The bald eagle, the peregrine falcon, and three salmonoids are the only listed species known or suspected to occur in the project area. A biological assessment (BA) of the projects impact on threatened and endangered species was prepared by Beak Consultants, Inc. and is enclosed as Appendix C. "No effect" determinations were made regarding impacts to the peregrine falcon or the Snake River spring/summer chinook salmon. BPA concluded that the proposed Coyote Springs Cogeneration Project is "not likely to effect" the bald eagle. BPA recently discovered that the biological assessment and associated findings were mistakenly sent to the Olympia office of the USFWS. The BA has since been sent to the Portland office of USFWS.

6.3 Fish and Wildlife Conservation

The Fish and Wildlife Conservation Act of 1980 (16 USC 2901 et seq.) encourages Federal agencies to conserve and promote conservation of non-game fish and wildlife species and their habitats. In addition, the Fish and Wildlife Coordination Act (16 USC 661 et seq.) requires Federal agencies undertaking projects affecting water resources to consult with the USFWS and the state agency responsible for fish and wildlife resources to conserve or improve wildlife resources.

The cogeneration plant, transmission line, and pipeline have been considered as the impact zone, which is defined as the boundary of the facility site. Within this designated zone, only limited resources that have the capability to promote fish and wildlife habitat were identified. Refer to Section 6.2 regarding endangered and threatened species, and Section 5, which describes natural features and discussion of impacts at the project site.

6.4 Heritage Conservation

Congress has passed many Federal laws to protect the nation's historical, cultural, and prehistoric resources. These include the National Historic Preservation Act, the Archeological Resources Protection Act, the American Indian Religious Freedom Act, the National Landmarks Program, and the World Heritage List. Preserving cultural resources allows Americans to have an understanding and appreciation of their origins and history. A cultural resource is an object, structure, building, site or district that provides irreplaceable evidence of human history of national, state or local significance. Cultural resources include National Landmarks, archeological sites, and properties listed (or eligible for listing) on the National Register of Historic Places.

Construction and operation of the cogeneration plant, transmission line and the gas pipeline could potentially affect historic properties and other cultural resources. Consultation with the Oregon State Historic Preservation Office regarding the plant site and transmission line, concluded with the finding that "No National Register or eligible properties are known to exist within the area of the undertaking's potential environmental impact, but it is highly possible that the area contains undiscovered historic sites of potential significance. Therefore, a cultural resources field survey is required."

PGE hired Archaeological Investigations Northwest, Inc. of Portland, Oregon, to conduct an intensive cultural resources survey for the Coyote Springs Plant site and the transmission line route. One projectile point, a core and a possible chopper were found on the slope of the railroad fill on the north border of the plant site. No other resources were found.

PGT similarly conducted an intensive survey of their proposed pipeline route. No prehistoric or significant historic resources were found (see 5-48). The SHPO, the Bureau of Reclamation, the Navy and the Confederate Tribes of the Umatilla were provided the survey results. To date, only the Umatilla have commented.

The State Historic Preservation Office issued a memo dated June 14, 1993 that acknowledges the survey report by the Museum of Natural History, and states that there are no issues raised by the report that are considered to be significant. The *Oregon DOE Proposed Order* (Appendix D) makes the following proposed findings:

(1) Based on the literature review, the site survey covering the proposed facility sites, and the lack of known historic, cultural or archaeological resources within the project impact area, the construction and operation of the proposed facilities will not result in a significant adverse impact to historic, cultural, or archeological resources.

(2) The site certificate will require that the applicant comply with applicable state laws regarding Indian graves, removal of historic materials and archaeological objects and sites.

The following proposed conditions are also stated in the ODOE Proposed Order:

(1) If the area in which artifacts were found is to be disturbed by construction or operation, the applicant shall obtain the recommendation of the SHPO for clearance requirements for the affected area, and

(2) The Applicant shall comply with all laws and regulations relating to historic, cultural and archeological resources, and with the conditions of the Site Certificate.

6.5 State, Areawide, and Local Plan and Program Consistency

The construction and operation of a power plant and related transmission facilities could conflict with the goals and objectives of local government land use plans.

In January 1986, the Oregon Land Conservation and Development Commission formally acknowledged the comprehensive land use plan and land use regulations of Morrow County, and found that the plan complied with Statewide Planning Goals. The City of Boardman's Comprehensive Plan and land use regulations were acknowledged in February 1978. Because the state acknowledged these comprehensive plans, the proposed project does not need to address consistency with the Statewide Planning Goals, as adopted by Senate Bill 100, as amended.

The proposed site of the facility is within the Port of Morrow's Industrial Park. The land has been leased from the Port of Morrow. The plant site is in Morrow County on unincorporated land that is within the City of Boardman's Urban Growth Boundary (UGB). The proposed electrical transmission line is also within Morrow County. A portion of the transmission line is outside the City of Boardman's UGB. Morrow County has planning jurisdiction over the land required for both the plant site and the transmission line under the Boardman Urban Growth Area Joint Management Agreement, which was signed by Morrow County, the Port of Morrow and the City of Boardman in March 1990 (ODOE, 1993).

The power generation facility site is zoned PI, Port Industrial. Power generation and utility facilities are uses that are permitted outright in this zone. The proposed transmission line will cross land zoned PI and MG (see Map 6). PGE will need a variance from Morrow County for the transmission line to cross MG zoned land. PGE applied to Morrow County for this variance on September 13, 1993 (ODOE, 1993).

Both the City of Boardman and Morrow County signed a Land Use Compatibility Statement for the proposed project, dated September 5, 1993. The statement indicates that the facility is consistent with Morrow County and City of Boardman land use plans. (ODOE, 1993.)

Subject to issuance of the land use variance for the transmission line, the ODOE staff report makes a proposed finding that the "applicant will have demonstrated receipt of necessary local land use approvals and compliance with Statewide Planning Goals." (ODOE, 1993.)

The 1991 Northwest Conservation and Electric Power Plan (Power Plan) recommends that all major power projects, that is, projects over 50 MW, be consistent with the resource acquisition principles and conditions of the current power plan. However, because the output of the proposed project will not be sold to BPA, the Northwest Power Planning Council will not be required to make a consistency determination. Therefore, ODOE did not asked PGE to provide an explanation of consistency with the Power Plan (ODOE, 1993). It is unknown if the proposed project is consistent with the Power Plan.

6.6 Farmland Protection

The Farmland Protection Policy Act (7 USC 4201 et seq.) directs Federal agencies to identify and quantify adverse impacts of Federal programs on farmlands. The Act's purpose is to minimize the amount Federal programs contribute to unnecessary and irreversible conversion of agricultural land to non-agricultural uses.

The gas pipeline and new 500-kV transmission line will cross irrigated farmlands for a distance of 0.5 km (1500 ft.). Agricultural activities are permitted to continue over the pipeline and within the transmission line right-of-way. Irrigation equipment will be adjusted to minimize impacts to agricultural lands. It is expected that less than 0.2 ha (0.5 acres) of farmland (roads and tower sites) would be taken from agricultural production.

The transmission line crosses lands zoned industrial. The site is committed to urban development, therefore, no farmland as defined in the Farmland Protection Policy Act will be affected and the project is in compliance with the Act.

6.7 Recreation Resources

Recreation resources are areas designated by the Wild and Scenic Rivers Act, the National Trails System Act, the Wilderness Act, or parklands, and other ecologically sensitive areas. None of these resources are impacted by the proposed project.

6.8 Floodplains

Floodplains are mapped by the Federal Emergency Management Agency as 100-year floodplains. Areas designated 100-year floodplains have a 1 percent chance of being flooded in a given year. Under Executive Order 11988, floodplain development is discouraged whenever there is a practicable alternative. If specific projects are proposed that might cause development in a floodplain, alternatives to developing in the floodplain will be considered.

The Columbia River shoreline is approximately 190 m (625 ft.) north of the proposed plant site. The plant and transmission line are within the *historic* Columbia River floodplain. However, dams on the Columbia River now regulate its flows, so the proposed plant site and transmission line corridor are considered outside the Columbia River's 100-year floodplain.

6.9 Wetlands

Areas inundated by surface or groundwater sufficient to support vegetation requiring saturated or inundated soil conditions for growth and reproduction are known as "wetlands." Examples include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflow areas, and mudflats. Under Executive Order 11990, construction in wetlands is discouraged whenever there is a practicable alternative. For specific projects other regulations also may apply:

- Section 404 of the Clean Water Act
- Section 10 of the Rivers and Harbors Act of 1899
- National Environmental Policy Act
- Fish and Wildlife Coordination Act
- Oregon's Removal-Fill law

If a permit is needed for a specific project, permitting agencies must find that the project's public values exceed the resource's public values, and that there are no other practicable alternatives.

Wetlands close to the project are shown on Map 8. The wetland bordering Messner Pond is nearest to proposed facilities. The proposed plant site, transmission line corridor, and pipeline route all avoid wetland areas. The proposed project will not impact wetlands and complies with Executive Order 11990.

6.10 Global Warming

Gases that absorb infrared radiation and prevent heat loss to space are called greenhouse gases. Greenhouse gases are thought to be connected to global warming. Greenhouse gases include: CO_2, CH_4, N_2O, NO_x, non-methane volatile organic compounds and stratospheric ozone-depleting substances such as chlorofluorocarbons.

The quantity of CO_2 emitted when fossil fuels are burned is proportional to the carbon content of the fuel. The more carbon present, the more CO_2 emitted. The proposed plant would use natural gas to fire the combustion turbines. Natural gas is primarily composed of methane, which contains one carbon atom and four hydrogen atoms. Because of its low carbon content, natural gas combustion produces about 40-50 percent less CO_2 than coal and approximately 25 percent less than petroleum products (Cornot-Gandolphe, 1993).

As mentioned above, the plant will use methane to fire the turbines. Methane is at least 20 times more potent a greenhouse gas than CO_2. Because of this, it is important to keep methane releases to a minimum. Methane emitted from the world's natural gas pipelines and natural gas mining operations is less than 10 percent of methane emitted from natural sources such as tundra, swamps, forest floors, termites and cows (Sheppard, et al., 1982). In addition, most natural gas leaks occur within residential distribution systems and not in wholesale distribution systems such as the one linked to this plant. New techniques have virtually eliminated methane escape during drilling.

The source of natural gas for the proposed cogeneration plant is from actively producing gas fields in Alberta and British Columbia, Canada. The number of natural gas wells that would be needed to supply PGE requirements was estimated by PGT. The average total yield of Canadian natural gas wells was divided into the total requirements of the Coyote Springs Plant (41 billion BTUs per day). Using this method, the output of 16 gas wells would be used each year by the Coyote Springs Plant (PGT, 1993). For perspective, 4,000 Canadian gas wells were drilled in 1991 and the total number of wells in Canada number in the hundreds of thousands (PGT, 1992). Thus the Coyote Springs Plant will use only a small amount of gas compared to that available in Canada. The world's proven reserves are expected to last approximately 58 years at the present consumption rate (*Inside Energy/with Federal Lands*).

Emissions of NO_x from the facility will be controlled by best available control technology.

Reducing greenhouse gas emissions also involves energy conservation. If less fossil fuel is consumed, fewer pollutants are generated. Cogeneration facilities are considered energy efficient because excess steam generated from power production is used by nearby industries that would otherwise generate their own steam, which would consume energy.

President Clinton has committed the United States to reducing its greenhouse gas emissions to 1990 levels by the year 2000. The Clinton administration has issued a Climate Change Action Plan to accomplish this objective. The plan encourages the use of natural gas for power generation, energy conservation measures, and reforestation projects. Currently, PGE does not plan to offset plant CO_2 emissions with reforestation.

In summary, the proposed plant's comparatively low CO_2 emissions, the gas industry's low percentage of losses in the wholesale gas distribution system, the plant's control of NO_x and N_2O emissions, and the facilities cogeneration capability combine to minimize the plant's global warming impacts. However, plant impacts could be further reduced by reforestation.

6.11 Coastal Zone Management Consistency

The Coastal Zone Management Act of 1972 requires Federal actions be consistent, to the maximum extent practicable, with approved state Coastal Zone Management Programs. If proposed projects could affect the coastal zone, BPA will consult with the state and ensure consistency with state programs. The project does not occur in the coastal zone, and thus is not subject to provisions of the Act.

6.12 Energy Conservation at Federal Facilities

The proposed plant is not a Federal facility. PGE would design buildings to meet Oregon energy conservation standards.

6.13 Pollution Control at Federal Facilities

The proposed plant will not be a Federal facility.

6.14 Noise Control

The proposed plant is within an industrial site. An analysis of plant noise and compliance with Oregon noise standards was conducted by Chester Environmental, a consulting firm hired by PGE. Noise contributed by construction and operation of the plant was found to be in compliance with Oregon noise standards. The ODOE Proposed Order (Appendix D) makes the following Proposed Finding:

> Based on the applicant's commitment to design and operate the proposed facility so as to meet the noise standard and limits of OAR Chapter 340, Division 35, and based on the noise analysis report documenting the ability to meet those standards and limits, the Coyote Springs Cogeneration Plant is capable of meeting the noise regulation standards and limits, and facility operation should cause no significant impacts to the surrounding area.

6.15 Federal and State Licensing and Permit Requirements for New Power Resources

This section describes licensing and permit requirements for new power resources. Information on mitigating environmental impacts in the legislation requiring licenses or permits, or references to appropriate regulations covering mitigation, are included in the discussion. The focus here is licensing and permit requirements needed at the generation site. The required permits for fuel procurement and transportation to the generation site are also important topics, but are outside the scope of this document. The following two Federal licensing requirements do not apply:

- Nuclear Regulatory Commission (NRC) licensing
- Federal Energy Regulatory Commission licensing of hydroelectric facilities

6.15.1 Certification to DOE under the Powerplant and Industrial Fuel Use Act

The Powerplant and Industrial Fuel Use Act of 1978, amended in 1981 and 1987, requires that baseload power plants with natural gas or petroleum as the primary energy source must have the capability to use coal or another alternative fuel as its primary energy source in lieu of natural gas or petroleum. Certification must be submitted to DOE prior to constructing a new powerplant or converting an existing power plant to baseload operation. Both BPA and PGE have contacted DOE. The Coyote Springs Cogeneration Project falls within an exemption clause of the Act. PGE is preparing a letter to DOE requesting exemption in accordance with this Act.

6.15.2 Emission Permits under the Clean Air Act

The basic statute for regulating air quality in the U.S. is the Clean Air Act. Clean Air Act-related permits described here apply to a new power resource.

Air Quality Regulations

Ambient Air Quality Standards - (40 CFR 50) (OAR 340-31-005 through 040) The U.S. Environmental Protection Agency has established national ambient air quality standards (NAAQS) to protect public health with an adequate margin of safety. NAAQS exist for a set of pollutants known as criteria pollutants (NO_x, SO_2, SO_4, hydrogen sulfide (H_2S), CO, particulates (TSP/PM-10), lead, asbestos, beryllium, mercury, vinyl chloride, fluorides, sulfuric acid mist, and ozone (O_3). EPA has designated all areas of the United States as attainment, non-attainment, or unclassified areas. Areas are classified by specific pollutants. Morrow County is designated as an unclassified/attainment area for criteria pollutants.

Prevention of Significant Deterioration (PSD)/New Source Review (NSR) - (40 CFR 52.21) (OAR 340-20-220 through 276) Any new source with emissions that exceed specified significance levels (OAR 340-20-225, Table 1) must undergo a NSR process. As part of this process, PSD applicability is determined. The PSD program is designed to protect air quality in areas cleaner than the NAAQS (attainment and unclassified areas). New fossil fuel-fired steam electric plants in attainment or unclassified areas that emit or have the potential to emit more than 100 tons per year of any criteria pollutant must acquire a PSD permit prior to construction. To obtain a PSD permit the proposed facility must: (1) use best available control technology to control emissions; (2) perform an air quality analysis to demonstrate that facility emissions do not cause a violation of NAAQS or PSD increments; (3) analyze impacts to soils, vegetation and visibility; (4) demonstrate that the project does not affect Class I areas; and (5) undergo adequate public participation. PSD increments (mentioned above) are the maximum ambient concentrations of criteria pollutants (as predicted by air quality dispersion modeling) allowed within attainment areas. The increments are small in Class I areas (pristine areas such as national parks) and higher in Class II and Class III areas. EPA has not yet designated any Class III areas (highly industrialized regions), which leaves the rest of the nation designated as a Class II area. Boardman is in a Class II area.

The proposed Coyote Springs Plant has the potential to emit 280 tonnes (260 tons)/year NO_x), 564 tonnes (513 tons)/year) CO and 86 tonnes (78 tons)/year TSP/PM-10, therefore, it is subject to NSR/PSD requirements for these pollutants. EPA has delegated the implementation of the Federal PSD program to DEQ. DEQ exercises its PSD delegated authority using its own regulations that are intended to be at least as stringent as Federal requirements.

New Source Performance Standards (NSPS) - (40 CFR part 60) (OAR340-25-505 through 675) NSPS apply to new sources and address particulate, opacity, SO_2 and NO_x emissions. Emission standards for stationary gas turbines (OAR 340-25-645) and industrial commercial institutional steam generating units (OAR 340-25-553) are applicable to this facility. Whenever any source is subject to more than one emission limitation rule, regulation, provision or requirement relating to the control of any air contaminant, the most stringent applies.

Air Contaminant Discharge Permit - (OAR 340-20-140, 20-185) and Fees (OAR 340-20-155) Any source emitting more than 10 tons/year of any criteria pollutant, or any source category listed in Table 1 (OAR 340-20-155) must acquire an Air Quality Contaminant Discharge Permit from State or local air pollution authorities. The Oregon DEQ issued an Air Contaminant Discharge Permit to PGE for the Coyote Springs Cogeneration Plant on April 6, 1994 (see Appendix F).

Notice of Construction and Approval of Plans - (OAR 340-20-020 through 032) Any process with emissions to the atmosphere is required to obtain a notice of construction from the state of Oregon prior to facility construction.

Plant Site Emission Limits (PSEL) - (OAR 340-20-300 through 320) All sources subject to State Air Contaminant Discharge Permit requirements are also subject to PSEL requirements. PSEL are baseline emission limits based on facility-wide emission rates.

Fugitive Emissions/Odors - (OAR 340-21-050 through 060) No odor impacts are expected.

Visibility - (OAR 340-21-015) This rule covers plume opacity. The proposed facility will comply with this rule.

Air Toxics - *Significant Emission Rates (SER) for the Hazardous Air Pollutant Interim Program*, December 1991. (Not a regulation but an interim DEQ policy.) Emissions will be below standards.

General Conformity Rule - The proposed facility will not fall under the General Conformity Rule because it is required to obtain a PSD/NSR permit and is therefore presumed to conform with State Implementation Plans.

6.16 Discharge Permits under the Clean Water Act

Aquatic systems intended to be protected as waters of the U.S. under the Clean Water Act are, in general, rivers, streams, lakes, estuaries, and special aquatic sites, including wetlands. Permits for discharges into waters of the U.S. are required under Sections 402 and 404. Section 402 regulates incidental discharges from construction activities. Section 404 regulates intentional discharges into waters of the U.S. to create dry land. Two sections of the Clean Water Act and their relationship with this project are discussed below.

Section 402 - National Pollutant Discharge Elimination System (NPDES) regulated by Oregon Department of Environmental Quality (DEQ).

PGE has registered for coverage under the General Permit 1200 C, and Morrow County has issued a NPDES stormwater permit and Erosion and Sedimentation Control Plan for construction of the plant and transmission line. The NPDES permit and Erosion and Sedimentation Control Plan are attached as Appendix G and Appendix H. PGE will prepare a Spill Prevention Control and Countermeasures Plan 90-days prior to beginning operational testing of the plant.

Section 404 - This section of the Clean Water Act is regulated by the U.S. Army Corps of Engineers. Fill and removal is regulated by the Oregon Division of State Lands under the Oregon Removal Fill Law. Generally, waterfilled depressions created in dry land incidental to construction activities and pits excavated in dry land for the purpose of obtaining fill or sand, are not considered waters of the U.S. unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States (preamble to 33 CFR 320-330/page 41217 under Section 328.3: Definitions).

Discharging fill into the gravel mining pond that is currently being mined, generally is not a regulated activity under Section 404 of the Clean Water Act.

Oregon Removal Fill Law - The Oregon DSL regulates the discharge of fill or the removal of material from waters of the State. Oregon does not regulate surface mining pits if the site is not protected in the local comprehensive plan.

The gravel mining pit is not regulated under Oregon Removal Fill law.

6.17 Safe Drinking Water Act

6.17.1 Underground Injection Permits

The principal Federal program applicable to intentional discharges to groundwater is the Underground Injection Control (UIC) Program established by Section 1421 of the Safe Drinking Water Act. The UIC program and permits in Oregon are issued by the Department of Environmental Quality. No underground injection wells are proposed as a part of the Coyote Springs Cogeneration Project.

6.18 Permits from the Army Corps of Engineers

The U.S. Army Corps of Engineers administers several permit programs that may apply to certain new power resource projects.

6.18.1 Rivers and Harbors Act

A permit from the Corps is needed under Section 9 of the Rivers and Harbors Act of 1899 for constructing a dam or dike in navigable waters in the absence of Congressional consent and approval of the plans by the Chief of Engineers and Secretary of the Army. The term “navigable waters” generally covers waters subject to the ebb and flow of the tide and/or waters usable for commerce transportation.

A permit from the Corps is also required under Section 10 of the Rivers and Harbors Act for constructing structures or work in or affecting navigable waters. No construction is proposed in navigable waters.

6.18.2 Clean Water Act

(See Section 6.16)

6.19 Notice to the Federal Aviation Administration

Construction of tall facilities such as emission stacks and transmission lines at a power generation site may require notice to the Federal Aviation Administration (FAA). Specifically, building any facility 61 m (200 ft.) or more above ground level requires notice to FAA. FAA must also be notified when facilities are to be constructed near airports. PGE has submitted plans for Coyote Springs facilities to FAA. Airway marking will not be required for the proposed facilities (PGE, 1994)

6.20 Permits under the Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA), as amended, is designed to provide a program for managing and controlling hazardous waste by imposing requirements on generators and transporters of this waste, and on owners and operators of treatment, storage, and disposal (TSD) facilities. Each TSD facility owner or operator is required to have a permit issued by EPA or the state. Construction and maintenance activities in BPA's experience have generated small amounts of hazardous waste. These typically include: solvents, pesticides, paint products, motor and lubricating oils, and cleaners. Under EPA and Oregon regulations, the amounts of these wastes generated by the Coyote Springs Cogeneration Plant would fall within the definition for a "small quantity generator." PGE will formulate a hazardous waste management program that meets all Federal and State hazardous waste requirements.

To Chapter 7

7. List of Preparers

Alder, Mike P.E. Facilities Engineering Project Manager. Responsible for location and design of BPA transmission lines and location and site development for BPA project management. Education: B.S., Civil Engineering. Experience: Transmission line design and project management. With BPA since 1981.

Anderly, Steven Contract Specialist in BPA's Division of Contracts and Rates. Responsible for the general transmission agreement with PGE. Education: B.A., General Science; MBA. Experience: Writing contracts. With BPA since 1977.

Barnhart, Ken Project Environmental Coordinator. Responsible for coordination and completion of environmental requirements. Education: B.S., Landscape Architecture. Experience: Environmental analysis, facility planning, and landscape architecture. With environmental consulting firms and BPA since 1971.

Collins , Dana On-site contractor. Responsible for geographic information system (GIS) data base automation, geographic analysis and cartographic output. Education: B.S., Geography, Experience: , 8 years experience in GIS development and analysis. Providing consulting services to BPA since 1992.

Concannon, Kathleen Writer/editor providing contractor support. Responsible for writing and editing the EIS. Education: B.S., Geology. Experience: Environmental analysis, resource planning and NEPA process. With BPA from 1980 to 1990. Providing consulting services to BPA since 1990.

Forslund, Debra Environmental Specialist in air quality. Responsible for writing air quality section of EIS. Education: B.S., Cellular Biology, and M.S., Public Health. With environmental consulting firms and BPA since 1988.

French, Jon, P.E. Electrical Engineer. Responsible for transmission system planning. Education: B.S., Electrical Engineering. Experience: Substation design and transmission system planning. With BPA since 1971.

Goranson, Robert Area Engineer for the Snake River Area. Responsible for engineering matters dealing with customer services/engineering and Area services in the Snake River Area. Education: B.S., M.S., Electrical Engineering. Experience: Worked in meter relay, Power Management, and as a staff engineer before becoming Area Engineer. With BPA for 29 years, twelve of those years as the Area Engineer for the Snake River Area.

Havens, Phil Environmental Specialist/Wildlife Biologist. Responsible for managing cultural resources and threatened and endangered species contracts for BPA's Division of Facilities Engineering. Education: B.S., Biological Sciences and graduate studies in wildlife management. Experience: Analysis of timber harvests and transmission line impacts on fish and wildlife. With BPA since 1983.

Hooson, John Environmental Specialist/Landscape Architect. Responsible for developing section on aesthetics (visual analysis) in the EIS. Education: M.S.L.A., Landscape Architecture. Experience: Facility Planning Manager and environmental coordination. With BPA since 1973.

Leonard, Randall On-site contractor. Responsible for reviewing threatened and endangered species investigations, fish and wildlife impacts/conservation and toxic and hazardous waste permitting. Education: B.S., Zoology (ecology) and M.S., Wildlife and Range Resources. Experience: Environmental/engineering studies, biological assessments, technical research, regional planning and feasibility analyses. Providing contractor support as an environmental planner to BPA since 1991.

Luiz, Johny Senior Electrical Engineer. Responsible for overall management of project. Education: B.S., Physics, and B.S., Electrical Engineering. Experience: Employed by various consulting firms and BPA since 1972.

Lynard, Gene Environmental Specialist and Assistant Project Environmental Coordinator. Responsible for assisting the Project Environmental Coordinator and writing land use and socioeconomic portions of the EIS. Education: B.A., Geography, and M.C.R.P., (City and Regional Planning). Experience: land use development economics, and facility and environmental planning. Employed by a number of consulting firms and BPA since 1977.

McFarling, Kathleen Civil Engineer. Responsible for location of towers and transmission line design. Education: B.S., Civil Engineering. Experience: transmission line design. With BPA since 1991.

Romans, Rita On-site contractor. Responsible for geotechnical investigation and writing the natural resources portions of the EIS. Education: B.S., General Science, and B.S., Geology. Experience: Eight years experience in geochemical surveying/wellsite geology and as a natural resources officer in land management. Providing contractor support to BPA since early 1993.

Sanchez, Leroy Visual Information Specialist. Responsible for graphic support relating to transmission facilities, assessment analysis. Education: Graphic design. Experience: GIS mapping, EIS graphics. With BPA since 1978.

Seiffert, Randy Environmental Engineer. Education: B.S., Chemical Engineering. Experience: NEPA compliance, air quality/thermal resource evaluation and industrial facility impact analyses.

Spiering, Colleen Environmental Specialist. Responsible for health, coordination, and analysis with respect to electromagnetic fields (EMF). Education: M.P.H., Health Education and Planning, B.S., Health Education. Experience: Health education and planning/public involvement/environmental analysis. With BPA since 1991.

Stearns, Rick Electrical Engineer. Responsible for engineering aspects of health and safety data with respect to EMF. Education: B.S., M.S., Electrical Engineering. Experience: Transmission line design issues related to corona and electric and magnetic field effects. With BPA since 1978.

Tawney, Patricia Responsible for public involvement. Education: B.S. and M.S., Political Science. Experience: Community development, manager and board member of a small utility. With BPA since 1971.

Thoms, Chris On-site contractor. Responsible for wetland identification and delineation. Education: B.S., Natural Sciences. Experience: Providing wetland consulting services since 1988. With BPA since 1991.

To Chapter 8

8. List of Agencies, Organizations, and Persons to Whom Copies of the EIS are Sent

Federal Agencies

U.S. Environmental Protection Agency
U.S. National Oceanic and Atmospheric Administration
U.S. Department of Interior - Bureau of Land Management
- Fish and Wildlife Service
- Bureau of Reclamation
- National Park Service
- Bureau of Indian Affairs
- National Marine Fisheries Service

U.S. Army Corps of Engineers
U.S. Department of Agriculture
- Soil Conservation Service
- Forest Service Region 1
- Mount Hood National Forest
- Umatilla National Forest

U.S. Department of Energy - Federal Energy Regulatory Commission
U.S. Department of Transportation
- Federal Highway Administration
- Federal Aviation Administration

State Agencies

Oregon

Department of Energy
Department of Fish and Wildlife
Department of Transportation
Department of Environmental Quality
Department of Economic Development
Department of Land Conservation and Development
Department of State Parks and Recreation
Executive Office
Public Utility Commission

Washington

Energy Facility Site Evaluation Council
Office of Energy
Wildlife Commission
Department of Community Development
Department of Ecology

Other Agencies and Local Government Organizations

Columbia River Gorge Commission
Columbia River Intertribal Fish Commission
Mid Columbia Council of Governments
Affiliated Tribes of Northwest Indians
Umatilla Tribe
City of Boardman
Port of Morrow
City of Portland
City of Irrigon
City of The Dalles
County of Umatilla
County of Morrow
Northwest Power Planning Council

Interest Groups

Audubon Society of Portland
Common Cause
Columbia Basin Institute
Columbia Improvement District
Don't Waste Oregon Committee
Friends of the Earth
Industrial Customers of Northwest Utilities
Izaak Walton League
League of Women Voters
League of Oregon Cities
Association of Oregon Counties
Association of Washington Cities
National Wildlife Federation
Nature Conservancy
Northwest Conservation Act Coalition
Northwest Envrionmental Defense Center

Oregon Hay Producers
Oregon Natural Desert Association
Oregon Natural Resources Council
Oregon People's Utility District Association
Oregon Rivers Council
Oregon Rural Electric Coop Association
Oregon Shores Conservation Coalition
Oregon State Grange
Oregon Wilderness Society
Salmon for All
Sierra Club

Depository Libraries

State of Oregon Library Building, Salem, OR
Walter M. Pierce Library, Eastern Oregon State College, La Grande, OR
Blue Mountain Community College Library, Pendleton, OR
Central Oregon Community College, Bend, OR
Aubrey R. Watzek Library, Lewis and Clark College, Portland, OR
Bonneville Power Administration Library, Portland, OR
Danial J. Evans Library, Evergreen State College, Olympia, WA
Washington State Library, Olympia, WA
Penrose Memorial Library, Walla Walla, WA
Boise Public Library, Boise, ID
Government Documents Library, Boise State University, Boise, ID
Regional Depository Millar Library, Portland State University, Portland, OR
U.S. Department of Energy Reading Room, Forrestal Building, Washington, D.C.

Others

Many businesses and individuals also are included in the mailing list. Their number is too extensive to list.

To Chapter 9

9.0 Public Comments on the Draft EIS

9.1 Public Involvement Opportunities

BPA mailed the Draft EIS to about 250 agencies, groups, and individuals. A list of agencies and organizations to whom the Draft EIS was sent is provided in Chapter 8. Commentors were invited to send comment leters directly to BPA, to complete a comment form, attend an open house and make oral comments to BPA staff, or make comments by toll-free telephone numbers. A 45-day review period ended on March 21, 1994. An open house format public meeting was held in Boardman on February 24, 1994 to review and receive comments on the Draft EIS.

This chapter contains written comments, comment forms, and oral comments made at the open house. Each comment is followed by a BPA response. Comments are organized by topic.

9.2 Comment Coding Method

Comments from the public open house, comment forms and comment letters were coded. Each comment was given a distinctive code. Comments made at the open house were given the prefix PM followed by a number. For example, the code PM-3 signifies public meeting comment number 3. A similar method was used to classify letters. Each letter received was given a number in the order received. Comments begin with the number 8 and end with the number 21. Often a comment letter contains several comments. If this occured, comments were given sequential numbers beginning with the letter number, e.g., 8-1, 8-2, 8-3.

Comments were further organized by topic based on the nature of comments received. The following outline was used to organize and respond to public comments:

Comment Categories

1. Process Comments
2. Decision Recommendations
3. Proposed Action
4. Environmental Impacts
5. Consultation, Review and Permit Requirements
6. New or Corrected Information

9.3 Comments and Responses

The following pages contain individual comments and responses arranged according to the comment categories shown above. Responses directly follow each comment.

Copies of all comment letters are enclosed after the comments and responses.

Code	
	# 1. PROCESS COMMENTS
PM11 Kathy Neal	**COMMENT:** I like the format/process for the meeting. **RESPONSE:** Comment noted.
14-6 Sharon Barrick	**COMMENT:** Thanks for the informal format - it was informative and I felt I could express my opinion freely! **RESPONSE:** Comment noted.
	# 2. DECISION RECOMMENDATIONS
8-1 M. Pepper	**COMMENT:** Wheel the power. **RESPONSE:** Comment noted.
9-1 W. C. Hendrix	**COMMENT:** Wheel power over BPA lines. I support Coyote Springs. **RESPONSE:** Comment noted.
11-3 J.K. Palmer	**COMMENT:** The City of Boardman supports the project. **RESPONSE:** Comment noted.
13-1 Robert J. Boss, M.D., President - Boardman Chamber of Commerce	**COMMENT:** The Boardman Chamber of Commerce wishes to go on record as unanimously supporting the Coyote Springs Cogeneration Project. The project reports have been reviewed. The attention to detail regarding the local environment and other impacts on the community have been reviewed. It is felt that this project is a welcome edition (sic) to the community. On behalf of the Chamber of Commerce, and as local voters, we wish to strongly support this project .... **RESPONSE:** Comment noted.

Code	2. Decision Recommendations Continued
14-5 Sharon Barrick	**COMMENT:** Coyote Springs Project will begin the process of finally unlocking the potential of this region. I look forward to the prospect of the development, because I believe that people here will meet the challenge to grow and change in a positive way. I hope this project is endorsed for immediate approval since everyone is served well by it. . . will provide economic diversity at a time when our state and region needs it most. **RESPONSE:** Comment noted.
PM12 Bob Vandecar	**COMMENT:** This is a good project and should proceed. **RESPONSE:** Comment noted.
PM13 Sharon Barrick	**COMMENT:** Good Idea - One that we can be supportive of in good conscience **RESPONSE:** Comment noted.
PM14 Sam Edwards	**COMMENT:** The project should not be subverted by personal environmental agendas. **RESPONSE:** Comment noted.
PM15 Gary Neal	**COMMENT:** Wheel ahead. **RESPONSE:** Comment noted.
PM5 Robert Forstenberg	**COMMENT:** The building trades and affiliates are looking favorably on the project and are planning to help build it. **RESPONSE:** Comment noted.
PM6 Bob Vandecar	**COMMENT:** As a resident of Boardman, I support the project. **RESPONSE:** Comment noted.

Code	2. Decision Recommendations Continued
14-4 Sharon Barrick	**COMMENT:** I believe this project represents an opportunity for us to develop greater diversity in our energy options, and that is good. **RESPONSE:** Comment noted.
PM1 Bob Vandecar	**COMMENT:** Power is needed if the economy is to progress. The Coyote Springs Cogeneration Project provides for this. **RESPONSE:** Comment noted.
PM7 Bob Vandecar	**COMMENT:** With less hydroelectric power available these days, CT's like Coyote Springs Cogeneration Plant can replace reduced hydro power. **RESPONSE:** Comment noted.
PM9 Sharron Barrick	**COMMENT:** We now have coal and hydroelectric power plants, but not much natural gas fueled generation. Gas power plants will provide diversity and needed competition. **RESPONSE:** Comment noted.
	3. PROPOSED ACTION
	3.1 Proposed Action - Coyote Springs Plant
18-1 Tom Meehan, Oregon Department of Energy	**COMMENT:** On January 5, 1994 PGE amended its application to EFSC for a site certificate. The primary change was to include the possibility of using a "zero discharge system" for managing wastewater rather the using the Port of Morrow's existing industrial wastewater disposal system. That change has implications for cooling tower drift as well as the quantity and quality of solid waste that would need to be disposed. **RESPONSE:** PGE's proposed action remains to dispose of wastewater by ground application through the Port of Morrow's wastewater disposal system. The Oregon DEQ approved wastewater disposal by land application

Code	3.1 Proposed Action - Coyote Springs Plant
	in early July, 1994. PGE is no longer considering a zero discharge wastewater disposal system.
18-2 Tom Meehan Oregon Department of Energy	**COMMENT:** The project has changed since the DEIS has gone to print. You asked if I would identify the more important changes . . . On January 5, 1994 PGE amended its application to EFSC for a site certificate. The primary change was to include the possibility of using a "zero discharge system" for managing wastewater rather the using the Port of Morrow's existing industrial wastewater disposal system. That change has implications for cooling tower drift as well as the quantity and quality of solid waste that would need to be disposed. In addition, in January 1994 PGE submitted to ODOE: a report on further site-specific seismic hazard evaluation, and ecological monitoring program (revised), additional information to supplement Exhibit U of its application, and clarification on the availability and sources of water for the project. **RESPONSE:** The FEIS contains updated discussions on these topics.
21-1 T. Walt-Gen. Manager, PGE	**COMMENT:** After the DEIS was prepared PGE made two significant decisions relating to the Coyote Springs project. First, the decision has been made to change the plant design so that the NO_x emissions from the project are 4.5 ppm. (NO_x emissions are discussed on page 3-12 of the DEIS.) This reduces the NO_x emissions from the project by one half. The second significant change is that PGE has committed to utilize a zero discharge system if a suitable plan for mixing the Coyote Springs wastewater with the Port of Morrow's wastewater is not approved by Oregon DEQ. In the event that a zero discharge system was utilized at Coyote Springs the portions of the DEIS relating to water usage and wastewater discharges would not be up-to-date. **RESPONSE:** The text of the FEIS has been revised to reflect these decisions.
21-5 T. Walt-Gen. Manager, PGE	**COMMENT:** There are several references in the DEIS about Coyote Springs being outside the City of Boardman. Please be advised that the Port of Morrow is in active discussions with the City of Boardman about annexing the Coyote Springs site into the City.

Code	3.1 Proposed Action - Coyote Springs Plant
21-5 T. Walt-Gen. Manager, PGE	**RESPONSE:** This is correct. The proposed site is within the City's urban growth boundary and the City of Boardman has agreed to annex the subject site. At the time of this writing, the City is in the final stages of documentation of the annexation. The process should be complete by early summer (Palmer, City Manager, City of Boardman, telephone communication, May 18, 1994).
20-2 Joan Cabreza, Environmental Protection Agency	**COMMENT:** Alternatives - The DEIS provides a clear description of the proposed Coyote Springs cogeneration project. EPA is concerned, however with the lack of alternatives for power generation....These alternatives are absolutely necessary in order to evaluate the comparative merits of other possible options. Other alternatives should be presented in the FEIS or a supplemental DEIS so the public can identify the least environmentally damaging option. EPA recognizes that PGE's 1992 Integrated Resource Plan (IRP) identifies a wide range of new energy sources that will be needed in the future. However, this does not preclude a thorough alternatives analysis. Since the IRP has already indicated a need for power that has "operating, cost and environmental characteristics of gas-fired, combined-cycle CTs (page 2-2), " the alternatives analysis should include different plant locations, transmission alignments, water well locations, access and other site-specific options. **RESPONSE:** BPA met with EPA and discussed why the scope of the Coyote Springs DEIS did not include an analysis of other energy resource options or alternate plant sites. A letter to EPA describing BPA's reasons for deciding on the scope of the Coyote Springs EIS is enclosed following EPA's comment letter. EPA has expressed satisfaction with BPA's explanation, and no longer contends that the EIS must review alternate energy resources or plant sites. An expanded discussion of the role of environmental factors and alternate energy resources considered in formulating PGE's IRP has been provided in Section 3.1.1 - How the Proposed Action was Defined. Transmission line alignments that were considered in developing the proposal are described in Chapter 3 of the FEIS in Section 3.1.4, Alternate Transmission Line Routes.

Code	Other Proposed Actions
	3.2 Proposed Action - Transmission System
18-4 Tom Meehan Oregon Department of Energy	**COMMENT:** The second to the last sentence of the first paragraph on page. 3-1, section 3.1, is unclear. It would be helpful if the EIS would explain what BPA would do if there is not enough transmission capacity for the second unit. How would BPA recover the costs associated with a complex upgrade if one were needed? **RESPONSE:** The text of the FEIS has been modified to enhance clarity where noted. As indicated in the revised text, integration of the second Coyote Springs unit could be accommodated in a number of ways. If PGE requests additional transmission services, BPA will need to consider environmental factors, the needs of PGE as well as other BPA customers, and cost recovery options before a decision is made. BPA recovers the cost of system improvements through such means as direct cost reimbursement as well as through its transmission service rate structure.
	3.3 Proposed Action - Gas Pipeline
21-4 T. Walt-Gen. Manager, PGE	**COMMENT:** Page 3-2 of the DEIS discusses the PGT line being built to Coyote Springs. The inference is that the lateral line to Coyote Springs will be sized to transport 41 billion BTU/day. The contract with PGT is for 41 billion BTU/day (enough gas for one unit a Coyote Springs). The pipeline is sized to carry about 100 billion BTU/day (enough gas for both units at Coyote Springs). **RESPONSE:** The text of the FEIS includes this information.

Code	
	# 4. Environmental Impacts
	## 4.1 Cogeneration Plant Impacts
20-3 Joan Cabreza, Environmental Protection Agency	**COMMENT:** Wetlands - Page 4-2 states, “The current land use of the proposed power plant site is vacant. The parcel was once operated as a gravel quarry, but the quarry has since been filled. . . “ This statement seems to imply that the gravel mining operation has ceased. However, later, on page 4-7 it states, “Because the (gravel mining) pond is created by an active mining operation, it is not regulated by either the Corps or the Oregon DSL.” These statements do not provide a clear impression of the current land use for the gravel mining pond. The final EIS should address this topic, as there (are) potential 404 permit implications if the pond is not longer used for gravel mining. BPA should contact the Army Corps of Engineers on this issue to clarify the situation. Before the final EIS is issued, the jurisdiction of the mining pond should be explained in detail. For further information, please contact Jim Goodzward at the Corps in Portland at (503) 326-5500. **RESPONSE:** BPA has contacted Jim Goodzward as requested. The text of the FEIS has been changed to include a history of mining activity at the gravel pond. The current land use of the proposed power plant site is zoned for Medium to Heavy Industrial on the Port of Morrow Industrial Master Plan. It is the site of aggregate mining. Mining by Ready Mix Limited has been an ongoing activity for 15 years (verbal information from the Port of Morrow). As the mining operation moved east, the western portion was filled in. This western portion is now the proposed site for the cogeneration project. Discharging fill into the gravel mining pond that is currently being mined generally is not a regulated activity under Section 404 of the Clean Water Act.
15-1 Rick Gove Columbia Basin Institute	**COMMENT:** This section attempts to explain how water for the Coyote Springs Cogeneration Project will be acquired. However, it is very unclear in its explanation and needs clarification. For instance, the first paragraph on page 5-10 states the water will be supplied from “three deep and shallow groundwater wells.” It then goes on to state that two new wells are in the application stage. There is no connection between these two statements as they are presented. Is the Coyote Springs Plant

Code	4.1 Cogeneration Plant Impacts
	dependent upon the wells under application? Are the current wells described in the first sentence supposed to provide all the water from the wells under application? Are the current wells described in the first sentence supposed to provide all the water or is the plan to supplement the water requirement with water from the wells under application? If the wells under application are denied, will the three mentioned wells be able to provide adequate water for the life of the project? If not, where will the water come from? (See Cumulative Impacts section.) **<u>RESPONSE:</u>** The water supply for the Coyote Springs Cogeneration Project has changed since the DEIS was prepared. The water needs of the project will be supplied from existing Port of Morrow wells. The plant is not dependent on wells under application. The City of Boardman will provide a backup water supply of 2,000 gpm from their Ranney Collector. The Port of Morrow transferred its Carlson Sump wells 1 and 2, and Port wells 3 and 4 from irrigation or industrial use to municipal use, and plans to supply the Coyote Springs Plant from these wells. Carlson Sumps 1 and 2 and Port Well 3 are alluvial and collectively have water rights totaling 7.3 m^3/m (1,910 gpm). Port Well 4 is a deep basalt well and would supply the remainder of the plants water needs 2.9 m^3/m (758 gpm). The City of Boardman has made a commitment to provide up to 7.3 m^3/m (2,000 gpm) to the plant from their Ranney Collector. This provides the ability to manipulate water delivery based on the price or quality of water desired. The City well also provides a backup supply source. The capacity of these wells is sufficient to meet Coyote Springs Cogeneration Project requirements. The Port had previously filed for two additional alluvial groundwater wells, referred to as Port Wells 6 and 7. According to Port personnel (Gary Neal, Port of Morrow Director, personal communication, April 27, 1994), the Port has deferred their plans to install these two wells. An application for one basalt aquifer groundwater permit (Port Well #5, with a permitted rate of 0.17 m^3/s (6 cfs) has been filed to augment the Port's existing total water supply. This well is not related to the Coyote Springs Plant. The water supply discussion of the FEIS incorporates this new information.

Code	4.1 Cogeneration Plant Impacts
15-2 Rick Gove Columbia Basin Institute	**COMMENT:** The section goes on to state in the third paragraph that the deep basalt aquifer well permit has been granted with conditions; one of them being that if the water is lowered more than 25 feet, the well would not be used until water levels recover. If this occurs, will the Coyote Springs Plant be required to obtain water from another source? If so, what is the source and what are the impacts? It is common knowledge and more than reasonably foreseeable that the groundwater aquifers in this area are rapidly depleting. Therefore, there should be much more detail in this section concerning exactly what groundwater aquifers are being depended on and to what extent, and what will happen if these groundwater sources cannot provide the water required by the Coyote Springs Cogeneration Project. **RESPONSE:** The previous comment response explained how the water supply for Coyote Springs Plant has changed since issuance of the DEIS. The basalt well (Port Well #5) referred to above will augment the Port's existing total water supply. This well is not a proposed water source for the plant. The alluvial aquifer wells that will supply the Coyote Springs Plant are not subject to the permit conditions and restrictions of the basalt aquifer wells. The water supply discussion of the FEIS was rewritten to remove reference to Port Well #5 as it no longer is required by Coyote Springs.
15-3 Rick Gove, Columbia Basin Institute	**COMMENT:** The Cumulative Impacts - Groundwater section is lacking in substance and needs to be significantly developed. . . . 1) There should be specific references to other actions which will cause cumulative impacts and an explanation of why this new action presents the threat of a cumulative impact. . . . "past, present, and reasonably foreseeable future actions" must be considered in an incremental sense. This demands a closer look at all past permits granted which commercial and industrial users and all past permits granted which allow groundwater withdrawals from the aquifers in this area. Another very important issue which must bear closer scrutiny is the proximity between the groundwater wells that the Coyote Springs Plant withdrawals will come from and the designated critical groundwater areas in the Boardman area. Such an analysis should also consider the current status of the groundwater aquifers to be used by the Coyote Springs Plant and if they are in danger of reaching a critical state of depletion.

Code	4.1 Cogeneration Plant Impacts
15-3 Rick Gove, Columbia Basin Institute	**RESPONSE:** As described in the response to comment 15-1, Coyote Springs Cogeneration Project's water needs will be supplied by existing Port water wells which have been transferred from irrigation or industrial use to municipal use. Three of the four wells draw water from the alluvial aquifer. No increase in withdrawals from these sources is anticipated to accommodate the Coyote Springs Plant. The Boardman Ranney collector is also alluvial. The alluvial aquifer is very transmissive and is hydraulically connected to the Columbia River such that impacts from pumping are generally very localized and do not result in significant changes in water levels. Water level declines are possible in the basalt aquifer if total pumping from all basalt aquifer wells exceeds the natural recharge to the aquifer. This condition has occurred elsewhere in the region which resulted in the designation of the Ordinance Critical Groundwater Area (OCGA), located just east of the proposed facility location. The OCGA pertains to the basalt aquifer and does not include the shallow alluvial aquifer. Potential present and future cumulative impacts associated with groundwater withdrawals may include declines in groundwater levels in either the shallow alluvial aquifer or the basalt aquifer. Water level declines could result in reduced yield in adjacent wells, reduction in natural groundwater flow to the river, or changes in vegetation patterns in areas where groundwater is close to the ground surface. To assess the significance of potential present and future incremental impacts due to pumping, an inventory of groundwater rights has been prepared for both alluvial wells and basalt wells located near the Coyote Springs Cogeneration Project, including all Port of Morrow wells (see Table 5-13). The information was obtained from Oregon Water Resources Department files and the Port of Morrow. The Port of Morrow controls 93 percent of the total permitted groundwater withdrawals near the Coyote Springs Plant. This does not include the City of Boardman's appropriation. The City of Boardman has a surface water right for 1 m^3/s (36 cfs), of which 6,600 gpm (14.7 cfs) is reported to be developed. Although the City has a surface water right, some of this appropriation is supplied by groundwater from the alluvial aquifer because the City uses a Ranney collector adjacent to the Columbia River. As shown in Table 5-13, 70 percent of the Port's permitted appropriation is from the alluvial aquifer and 30 percent is from the basalt aquifer. The

Code	4.1 Cogeneration Plant Impacts
15-3 Rick Gove, Columbia Basin Institute	total Coyote Springs Plant demand will make up 22 percent of the total Port-owned alluvial aquifer appropriation. As stated previously, the Coyote Springs Cogeneration Project demand will not result in an increase in alluvial aquifer pumping in the area since the wells supplying the project have been used historically by the Port for its other operations. In fact, there will be a net 4.5 cfs reduction in pumping during the summer as a result of transferring the water right at the Carlson Sumps from a 6-month agricultural right to a 12-month municipal right. Furthermore, the cooling and blowdown wastewater generated by the Coyote Springs will be reused to irrigate crops at the Port of Morrow land application sites. The Port presently beneficially reuses a total of nearly 1 billion gallons of water per year, which results in significant conservation of water that would otherwise be obtained from the Columbia River or groundwater. While not directly associated with the Coyote Springs Cogeneration Project, the Port of Morrow's new basalt well (Port Well # 5) will make up 41 percent 10 m^3/m (2,693 gpm) of the total permitted basalt aquifer withdrawals near the plant (Table 5-13). The OWRD has responsibility and authority to review and approve all requests for groundwater appropriations. The review process includes an assessment of whether the aquifer can support the additional pumping without injuring senior water rights holders. The OWRD has determined that Port Well #5 will not create unacceptable present or future impacts and has issued a favorable technical review of the Port's application. Further, OWRD has stated that there are sufficient water rights within the Port of Morrow to support the project. If unacceptable impacts due to pumping are observed in the future, the OWRD has the authority to limit further appropriations and reduce the total pumping demand based on seniority of water rights. This authority has been exercised at the Ordinance Critical Groundwater Area. The OWRD is not considering expanding the OCGA. In conclusion, there is no information that indicates that the proposed groundwater withdrawals for the project would result in unacceptable present or future cumulative impacts. This conclusion is supported by the following: • The Coyote Springs Plant will derive its water supply from existing permitted shallow aquifer water sources at the Port of Morrow.

Code	4.1 Cogeneration Plant Impacts
	• The OWRD has stated that there are sufficient water rights available at the Port to supply the project. • There will be a net 0.13 m^3/s (4.5 cfs) reduction in pumping from the alluvial aquifer during the summer months when low flow in the Columbia River is a concern for fish protection reasons. • OWRD has issued a favorable technical review of the Well #5 permit application. • The number of groundwater users near the Coyote Springs Cogeneration Project are limited; the Port controls 93 percent of the groundwater rights within a mile of the project. • OWRD has the responsibility to monitor future impacts caused by overpumping and will limit further appropriations if it is found that senior water rights holders are being adversely impacted.
8-2 M. Pepper	**COMMENT:** I assume the plant will have backup storage of diesel or #6 oil for use in the event of a gas curtailment. If so, what are the potential adverse impacts of that? How will the owners prevent leakage of those tanks and how will they respond to (i.e. clean up) a tank rupture? Will the owners file prevention and contingency plans? **RESPONSE:** PGE originally planned to construct diesel storage tanks at the north edge of the plant site. They planned to provide oil spill containment around the tanks to contain the oil in case of a rupture. Air emission modeling revealed that particulate emissions, while using diesel fuel, exceeded significance thresholds. Extensive air quality sampling over a period of at least one year would be needed to demonstrate that actual emissions, as contrasted with modeled emissions, would meet particulate standards. Rather than delay the plant schedule to complete extensive air sampling, PGE deleted oil backup from its proposal and presently the plant has no backup fuel source. In the event of a gas curtailment the Coyote Springs Plant would be shut down. PGE is currently conducting air quality sampling studies. If the new air sampling studies show that the plant may operate with oil and still meet particulate emission standards, PGE will seek a revision to its Air Contaminant Discharge Permit from the Oregon DEQ. An amendment

Code	4.1 Cogeneration Plant Impacts
	to PGE's Oregon Energy Facility Site Certificate would also be requested to allow use of diesel fuel and on-site oil storage. Oil spill prevention and containment plans would be a part of the Oregon Site Certificate amendment process. If large oil storage tanks are later installed at Coyote Springs, they would be subject to the Clean Water Act, which is administered by DEQ. A SPCC Plan would be required, and must be prepared by a licensed professional engineer. The SPCC Plan would be kept at the Coyote Springs Plant site.
14-2 Sharon Barrick	**COMMENT:** I strongly favor the concept of cogeneration plants utilizing natural gas. It represents an alternative source of energy to fossil fuels which generate higher levels of "greenhouse" gases. People who share my concern for global warming and greenhouse effects will agree that alternatives to coal and petroleum combustion deserve consideration, since natural gas produces less greenhouse gases... **RESPONSE:** Comment noted.
14-3 Sharon Barrick	**COMMENT:** It appears that PGE does not plan CO_2 offset mitigation at this time, but is noteworthy that Boise Cascade and Potlatch Farms are developing almost 12,000 hectares (30,000 acres) of tree farms nearby, which will produce substantial O_2 output. Indeed anyone who flies over this so-called high desert area, viewing the green circles below must conclude that corporate farms are producing significantly greater amounts of oxygen than the native flora... I realize that I am citing other, outside industry, in our community, but isn't that the point of environmental studies? How connected everything is? **RESPONSE:** The benefits of tree/vegetation planting in relation to CO_2 emissions comes from the CO_2 they take from the atmosphere during photosynthesis, not the oxygen they emit, although oxygen is certainly beneficial. The net CO_2 sequestration capabilities of crops verses native scrub brush is probably close to the same. Crops grow faster, are harvested sooner and thus returned to the atmosphere sooner than native vegetation.
PM4 Sharon Barrick	**COMMENT:** Boise Cascade/Potlatch Farms is planning to plant poplar trees (eventually 30,000 acres) in Morrow County. The plantation is about 6 km (4 miles) from Boardman in the Three Mile Canyon area. The CO_2 emis-

Code	4.1 Cogeneration Plant Impacts
	sions from Coyote Springs and CO_2 used by the tree farm are interactive and may cancel each other. **RESPONSE:** Coyote Springs CO_2 should not be associated with Boise Cascade and Potlatch poplar groves for the following reasons. (1) The general assumption behind carbon sequestration is that CO_2 will be taken out of the atmosphere by vegetation and permanently stored in trees or structures. Poplars (cottonwoods) and other fast growing trees are harvested 6 years after planting, and are then used to make paper products which are usually disposed of and returned to the atmosphere within 5 years of production. Thus poplar trees do not create long-term carbon storage and should not be considered for carbon sequestration. (2) Typically, those who invest in carbon sequestration are the ones who receive credit for the carbon they capture. Because Boise Cascade and Potlatch will be planting the poplars, they will most likely want to receive credit for their efforts. (3) 12,000 hectares (30,000 acres) of vegetation will consume between 15,000 tons and 150,000 tons of CO_2 per year. Coyote Springs will generate 1 477 000 tonnes (1,625,000 tons) of CO_2 /year. At best the poplars will consume only 10 percent of Coyote Springs' CO_2 emissions.
15-4 Rick Gove Columbia Basin Institute	**COMMENT:** There needs to be an identification of the different types of cumulative impacts that may result from this action. The analysis must then give detailed information as to how the proposed action will impact the discussed area (groundwater), considering the proposed action in an incremental sense with the other identified actions discussed in Point #1 (15-3). **RESPONSE:** Section 5.1.4 of the Draft EIS reported cumulative impacts in the following categories: global warming, transmission capacity, groundwater, regional energy resource needs, tax revenues, housing supplies and natural gas supplies. Greater quantification of groundwater and global warming cumulative impacts has been provided in the FEIS. BPA's response to question 15-3 provides detailed information on cumulative impacts to groundwater resources. Cumulative alluvial aquifer water withdrawal attributed to the Coyote Springs Project when added to other water uses in the area, is not expected to jeopardize the continued existence of endangered or threatened Snake River salmon species. This conclusion is supported by the Biological Assessment of Beak Consultants, Inc. (see Appendix C), and testimony of John J. Pizzimenti, a scientist who specializes in environ-

Code	4.1 Cogeneration Plant Impacts
	mental impact studies to fish on regulated rivers for Harza Northwest, Inc. John Pizzimenti testified on behalf of PGE's with regard to their application to the Oregon Energy Facility Siting Council. Water use attributed to the Coyote Springs Plant together with existing water uses having a hydrological connection to the Columbia River would conservatively reduce Columbia River flow by about 1.4 m^3/s (50 cfs). Compared with the spring runoff during juvenile migration in the Columbia River of 7300-9700 m^3/s (260,000-343,000 cfs) in 1983, both the Coyote contribution of 0.17 m^3/s (6.0 cfs) and the cumulative reduction of 1.4 m^3/s (50 cfs) in flows are insignificant. Furthermore in Pizzimenti's testimony he concludes "there is no evidence that main-stream flow is the primary determinant of salmon survival in most years in the Snake and Columbia rivers, and especially in the John Day pool."
15-5 Rick Gove Columbia Basin Institute	**COMMENT:** The second paragraph of the groundwater section goes on to state that the well may face restrictions in future years. The preceding paragraph states that future groundwater rights may be restricted because of the rapid rate of decline of Columbia River aquifers. However, the analysis provides the reader with absolutely no information as to how the Coyote Springs Project will operate if the groundwater aquifer it is withdrawing from is depleted to the point that the Coyote Spring Plant's right is limited or eliminated due to claims of senior right holders. Clearly if this DEIS states that this possibility exists, it is reasonably foreseeable that such an event will occur. Yet, the cumulative impact section simply raises the issue and fails to supply any substantive information concerning what water source the Coyote Springs Plant will use and what the impacts of the unmentioned water source would be on the threatened and endangered fishery. **RESPONSE:** The text referenced is from the Cumulative Impact Section of the DEIS. Cumulative impact predictions involve a degree of uncertainty, and therefore receive much factual debate. The challenge in preparing the cumulative impact section of an EIS is to decide if an impact is reason-ably foreseeable or merely speculative. Reasonably foreseeable im-pacts are reported in an EIS, speculative impacts are not. As mentioned previously, the water source for Coyote Springs Plant has changed since publication of the DEIS. The cumulative impacts dis-cussed in the DEIS were thought foreseeable considering that the water

Code	4.1 Cogeneration Plant Impacts
	for Coyote Springs Plant then was to come from the basalt aquifer. Water level declines are possible in the basalt aquifer if total pumping from all basalt aquifer wells exceeds the natural recharge to the aquifer. This condition exists just east of the plant site and has resulted in the designation of the Ordinance Critical Groundwater Area, and the imposition of strict groundwater restrictions by the Oregon Water Resources Department. However, under current plans nearly all of Coyote Springs Project's water requirements will be supplied from Port of Morrow alluvial aquifer wells. In addition, the City of Boardman has agreed to provide 2,000 gpm of water from its Ranney collector (also alluvial) as backup to the Port of Morrow wells should an unforeseen condition require it. Thus Coyote Springs Project is no longer dependent on the basalt aquifer and would likely be unaffected by restrictions that might be imposed on it. It seems reasonable to conclude that the plant's water supplies are secure. The cumulative impact discussion (Section 5.1.4) has been revised accordingly. A wide range of recovery plans have been promoted for protecting threatened or endangered salmon in the Columbia River. Dropping the John Day pool level significantly 12 m (40 ft.) is one option that has come to BPA's attention. BPA along with the Corps of Engineers and the Bureau of Reclamation are planning to issue the System Operation Review (SOR) DEIS in late July 1994. The SOR DEIS evaluates different Columbia River operation strategies for effects on threatened and endangered salmon species. The SOR DEIS includes two alternatives in which the John Day pool would be lowered marginally 1.5-3 m (5-10 ft.) to either the level of irrigation intakes or the minimum level required to operate the navigation lock. Dropping the John Day pool 12 m (40 ft.) is not currently under consideration, and thus is not considered reasonably foreseeable.
15-6 Rick Gove, Columbia Basin Institute	**COMMENT:** Other types of potential cumulative impacts which should be analyzed and discussed are impacts to local water supplies, the potential of impacts to critical groundwater areas located nearby, impacts to deep aquifers which may result from drawdowns in the shallow aquifers, impacts to other fish and wildlife in the area which are dependent on the groundwater or hydrological connected surface water, impacts on irrigation operations in the area which may result from depleted groundwater aquifers, and impacts on Columbia River flows due to the

Code	4.1 Cogeneration Plant Impacts
15-6 Rick Gove, Columbia Basin Institute	hydrological connection. Again, these impacts must be considered in light of past, present and reasonably foreseeable future actions which also impact the groundwater resource. **RESPONSE:** Based on a capture zone analysis conducted by CH_2M HILL, estimated areal extent of pumping effects from the shallow wells (Port Well 3 and Carlson Sumps 1 and 2) at their permitted rates, are within the Port's property boundary. Furthermore, these wells that would supply the Coyote Springs Cogeneration Project will be pumped at rates similar to their current rates, and therefore not generate new impacts. Therefore, impacts to local water supplies such as domestic and irrigation wells are not anticipated. Potential impacts to critical groundwater areas are discussed in Comment No. 15-3. Impacts to the basalt aquifer from drawdowns in shallow aquifer are likely to be minimal and localized because of the characteristics of the shallow alluvial aquifer as described above. In addition, the basalt and shallow alluvial aquifers are two distinct aquifers with limited hydraulic connection (except possibly where uncased boreholes interconnect them). As described in Exhibit O of PGE's Facility Siting Application, there are two ways for alluvial wells to impact streamflow in the Columbia River. First, removing water from the alluvial wells could reduce the volume of water naturally entering the Columbia River from alluvial aquifers. Secondly, river water could recharge the aquifer due to pumping the aquifer. However, given that the average annual streamflow on the Columbia River in this area is on the order of 122,000,000 acre-feet/year (discharge from the McNary Dam, Columbia River Water Management Report, Water Year 1989), Coyote Springs Project water requirements are less than 0.005 percent of the Columbia River flow. Therefore, impacts to the Columbia River flow due to pumping are insignificant. Messner Pond and wetlands along its borders are the most noteworthy wildlife habitat near the plant site. Map 8 illustrates the boundary of the wetland bordering Messner Pond. Water needs of the Coyote Springs Project will be provided from existing wells at existing rates of withdrawal. Thus no change in wildlife habitats or populations are

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	anticipated. PGE will conduct an Ecological Monitoring Program (Appendix E) for the Coyote Springs Project which will provide early notice and cause corrective actions to be undertaken if unanticipated wildlife impacts occur.
15-7 Rick Gove, Columbia Basin Institute	**COMMENT:** One area which BPA surprisingly does not analyze as a cumulative impact is the potential impact on BPA's ability to generate hydropower due to interruptions in surface flows of the Columbia River. This impact has a definite measurable effect on BPA rates. The ability for BPA to produce cheap hydropower is reduced when water is withdrawn from the Columbia, its tributaries or shallow aquifers which have a hydrological connection to the river or tributaries, because there is less water going through the turbines. To meet its firm load requirements in low water years, BPA must then replace this lost cheap power with much more expensive power produced by thermal resources. This cost is passed on to the region's ratepayers in the form of rate increases. The DEIS provides no analysis of the potential impact on electric rates from the above described potential loss. Withdrawing water for the production of thermal power, at the cost of decreasing the potential for cheap hydropower should be analyzed. Though it may well be an acceptable trade-off in this case, without analysis and research the decision maker has no basis to make an informed decision. Even if it is an acceptable trade-off, it is nevertheless an impact which BPA should be calculating any time it is analyzing the impacts of an action which may potentially impact Columbia River flows, especially in a cumulative type of analysis. . . . . For a calculation of the potential lost hydropower and how much it will cost BPA ratepayers, the DEIS should contain the following analysis. Assuming that the entire water requirement of the Coyote Springs Plant is supplied by groundwater wells which have a hydrological connection to the Columbia River, the annual amount of water withdrawn from the river will be 4,300 acre-feet. This amount of water in the John Day pool, when dropped through turbines, would produce just over 1 million kilowatt hours of electricity. If the withdrawal is made for Coyote Springs, BPA will then have to replace the 1 million kilowatt hour loss by purchasing an equivalent amount of electricity from more expensive thermal resource power producers. According to BPA's 1993 Final Rate Proposal, such purchases have an average cost 60.64 mills per kilowatt hour. Thus, the annual cost to replace this

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	withdrawal will be just over $63,000. Projected over the 30-year life of the project, replacement power will cost BPA and consequently its ratepayers $1.9 million in 1993 dollars. **RESPONSE:** The commentor is correct in pointing out the omission of an analysis of lost hydropower due to reduced Columbia River flows and the effect of this loss on BPA rates. The calculation provided in the response is essentially correct. The cost of replacement power would probably average less than 60.64 mills, but assuming the worst case, lost hydropower revenues could range from $60,000-$70,000. PGE will pay BPA wheeling charges ranging from $3-4 million annually for each of the Coyote Springs units. The revenue impact of the Coyote Springs Project on BPA rates will thus be positive. BPA uses a rule of thumb to calculate the impact of expenditures and income on rates: each $100 million dollar change in finances contributes one mill to BPA's rates. Thus no discernible change in rates will result from Coyote Springs wheeling revenues.
15-8 Rick Gove, Columbia Basin Institute	**COMMENT:** For each type of cumulative impact identified, there should be a detailed discussion of such things as the quantity of water being used and the quantity of water other actions are using or are proposed to use. Using these real numbers, calculations and estimates should be made that give the decision maker more substantive knowledge of the potential resulting impacts. **RESPONSE:** BPA responses to previous CBI comments were made in as quantified a manner as was possible. We believe that the commentor has made several good points and that the responses and changes to the EIS provide the decision maker with more substantive knowledge than was previously the case.
16-3 Edmund V. Clark Ida-West Energy Co.	**COMMENT:** Air quality impacts are discussed at the bottom of S-7. Only the more significant potential impacts should be discussed in the Summary. It may be confusing to the public to mention methane as it's done here since the Coyote Springs Project will normally release no methane directly to the atmosphere. Section 6.10 of the DEIS does a good job of discussing potential fugitive methane emissions and that should be adequate. It would be appropriate in the paragraph, however, to mention that CO_2 is a greenhouse gas and is formed in the combustion of methane. It may also be worthwhile to mention that CO_2 emissions at

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	the Coyote Springs Cogeneration will be minimized through: (1) The use of advanced power plant technology to achieve a high efficiency and thereby minimize CO_2 per unit of electricity produced, (2) providing steam from the power plant to local food processors to allow the shut down of the food plant boilers, and (3) using natural gas as a primary fuel. The ratio of carbon to other atoms is lower in natural gas than coal and other hydrocarbon fuels which reduces CO_2 emissions per kWh generated. **RESPONSE:** The summary of air quality impacts on page S-7 has been rewritten in response to this comment.
16-4 Edmund V. Clark Ida-West Energy Co.	**COMMENT:** Under Global Warming, the DEIS states: Greenhouse gases contribute to Global Warming. This statement is very misleading in that the study of greenhouse gases and their effect on climate change is subject to substantial controversy and uncertainty and it gives the reader the impression that it is a fact. A March 1992 Gallop poll found that only 17% of climatologists said they believe human-induced warming has occurred and 53% said they remain convinced that jury is still out on global warming. (The Electricity Journal, February 1994, page. 68). **RESPONSE:** The text of the FEIS, page S-9, has been changed to reflect this comment.
16-6 Edmund V. Clark Ida-West Energy Co.	**COMMENT:** Please refer to the statement: Water use from the shallow aquifer in the Columbia Basin could affect recovery plans for threatened or endangered salmon. This statement is misleading because the amount of water used by the Coyote Springs Project is insignificant to the total flows in the Columbia and therefore its effects on threatened and endangered salmon is also insignificant. **RESPONSE:** See BPA's response to the Columbia Basin Institute.
16-8 Edmund V. Clark Ida-West Energy Co.	**COMMENT:** Please refer to the last sentence on page 3-11: Good combustion controls will be used to limit SO_2 emissions. The combustion controls planned for Coyote Springs will have no effect on the plant's SO_2 emissions. Any sulfur in the fuel will be emitted as SO_2. **RESPONSE:** Good combustion controls reduce the amount of fuel required thus limit SO_2 emissions.

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16-9 Edmund V. Clark Ida-West Energy Co.	**COMMENT:** In discussing CO_2 at the top of page 3-12, current control technologies are described as ineffectual for CO_2. This is misleading and confusing, because CO_2 emissions are simply a function of the carbon content of the fuel. Actually, the project has plans that will be effective in minimizing CO_2 emissions: (1) Maximizing plant efficiency (2) the use of natural gas rather than a fuel with a higher carbon content, and (3) provisions for cogeneration. **RESPONSE:** The text of the FEIS has been changed to reflect this comment.
16-10 Edmund V. Clark, Ida-West Energy Co.	**COMMENT:** On Page 5-19 and at a couple of other locations in the document it is stated: Emissions of NO_x and N_2O from the facility would be controlled by best available control technology. NO_x emissions are controlled by combustor design and SCR, however, the N_2O (nitrous oxide) emissions are actually increased by the use of SCR. (Gas Turbine Selective Catalytic Reduction Procurement Guidelines", EPRI GS-7254, May 1991, pp. 2-6). **RESPONSE:** The text of the FEIS has been corrected.
18-10 Tom Meehan Oregon Department of Energy	**COMMENT:** The conclusion that the cooling tower drift would not have adverse impact on Messner Pond was based on a specific drift rate and a specific concentration of total dissolved solids (TDS) in the cooling tower water. If PGE uses a zero discharge system, the concentration of dissolved solids in the cooling tower water may be much higher than this level. Thus, the conclusion that there would be no adverse impact to Messner Pond may no longer be true. ODOE has asked PGE to redo its cooling tower drift impact analysis assuming a zero discharge system. We have not seen the results and have not determined that there would be no adverse impact to Messner Pond. **RESPONSE:** A copy of the cooling tower drift analysis is included as Appendix I. The new analysis considers drift due to the higher concentration of minerals that would occur in a zero discharge system. Oregon DEQ has approved wastewater disposal using the Port of Morrow land disposal system. The zero discharge system is no longer under consideration.

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18-11 Tom Meehan Oregon Department of Energy	**COMMENT:** PGE has submitted an "Ecological Monitoring Program" by letter dated January 5, 1994 to ODOE. **RESPONSE:** A copy of the monitoring plan has been included as Appendix E.
18-12 Tom Meehan Oregon Department of Energy	**COMMENT:** We were unaware that PGE had done a Biological Assessment (BA) on federally listed threatened and endangered species. We appreciate BPA including it in the DEIS. I would appreciate you keeping me advised on USFWS and NMFS responses to the assessment. **RESPONSE:** "No effect" determinations were made regarding project impacts to threatened or endangered salmon species and the peregrine falcon. No effect determinations do not require a response from USFWS or NMFS. A not "likely to effect" determination was reached regarding impacts the bald eagle. This determination was mistakenly sent to the USFWS office in Olympia, Washington. We recently sent the BA to the USFWS Portland office. We will inform you of their response.
18-13 Tom Meehan Oregon Department of Energy	**COMMENT:** It would be helpful if the EIS would explain who receives and reviews PGE's stormwater pollution plan. **RESPONSE:** The SWPP for the Coyote Springs Plant are reviewed and approved by Morrow County. The county has approved the SWPP Plan for Coyote Springs. A copy of the plan and the county's approval letter are in Appendix G. A copy of the Erosion and Sedimentation Control Plan is published as Appendix H.
18-17 Tom Meehan Oregon Department of Energy	**COMMENT:** With regard to Vegetation/Wetland Impacts page 5-20, See comment for cooling tower, page 5-7. **RESPONSE:** See previous responses.
18-4 Tom Meehan Oregon Department of Energy	**COMMENT:** The discussions on water, well water use and wastewater are no longer accurate. The most recent information I have from PGE (letter dated January 3, 1994) shows that water for the project would come from several existing wells (both shallow alluvial and deep aquifer) operated by the Port, and from the City of Boardman. See ODOE Proposed Order, page 14, 15. Also, PGE on January 5, 1994, amended its appli-

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	cation to EFSC to provide for a "zero discharge system" as an alternative to discharging project wastewater to the Port's current industrial wastewater disposal system. PGE did this because of the uncertainty as to whether the Port may legally dispose of the wastewater under Oregon DEQ regulations. At this time, PGE has not decided which wastewater disposal method it will use. See ODOE Proposed Order page 16, 17, 41, 42, 45, 46. **RESPONSE:** The referenced discussions have been revised to reflect PGE's current plans. The ODOE Proposed Order is published as Appendix D.
18-5 Tom Meehan Oregon Department of Energy	**COMMENT:** If PGE should use a "zero discharge system" for wastewater disposal, it would generate an estimated ten tons per day of dewatered sludge. See PGE Amendment and ODOE Proposed Order, page 41, 42, 45, 46. **RESPONSE:** DEQ approved disposal of Coyote Springs Project wastewater via the Port of Morrow land application system in July 1994. The zero discharge system is no longer under consideration.
18-6 Tom Meehan Oregon Department of Energy	**COMMENT:** PGE has done more site-specific seismic hazard analysis at the request of DOGAMI. The report was done by Ebasco, dated January 1994, and transmitted to ODOE by letter dated January 20, 1994. **RESPONSE:** BPA has obtained a copy of the Ebasco report, and has modified the text of the FEIS to reflect its findings. The report has also been added to the references list in Chapter 10.
18-7 Tom Meehan Oregon Department of Energy	**COMMENT:** In 1993, the Oregon Fish and Wildlife Commission listed the Snake River spring/summer chinook salmon and Snake River fall chinook salmon as threatened as provided under Oregon law. **RESPONSE:** The text of the FEIS recognizes Oregon's listing of these species.
20-4 Joan Cabreza Environmental Protection Agency	**COMMENT:** Water Quality - It is the goal of the Clean Water Act to restore and maintain the chemical, physical and biological integrity of the nation's waters. The final EIS should clearly demonstrate that project implementation will comply with state Water Quality Standards. State Water Quality Standards establish designated uses for a water body (or water

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20-4 Joan Cabreza Environmental Protection Agency	body segment), support the uses with water quality criteria, and where necessary, protect that water quality with an antidegradation policy. Baseline water quality data at the project level are key in the evaluation of projected impacts. Therefore, data from relevant sampling efforts should be included as part of the "affected environment" discussion. The discussion should be included as part of the "affected environment" discussion. The discussion should identify the amount and quality of available resource information, including data gaps and needs. When baseline water quality data are not available, assessments based on extrapolation from comparable watersheds or professional opinion should be carefully explained. The final EIS should provide a quantitative basis to judge whether physical and chemical parameters, such as temperature, turbidity, and sediment accumulation, will be kept at levels that will protect and fully support designated uses and meet Water Quality Standards under each of the action alternatives. The state's identification of water bodies with impaired uses (found in the state 303(d) report), as well as the magnitude and sources of such impairment, should also be included. **RESPONSE:** It is BPA's practice to write its EIS's so as to be understood by nontechnical readers. Technical data is typically summarized and referenced or included in appendices. Quantitative data on water resources that was used in assessing project cooling tower impacts is summarized below and included in Appendix I. The project area is included within the area of the Lower Umatilla Ground Water Management area as defined in Oregon's 305(b) Report, 1992. Groundwater investigations began in 1990. High nitrogen levels have been detected in groundwater samples. The ongoing investigations concentrate on human activities that impact groundwater quality and the potential connection between alluvial groundwater and surface water. The technical report describing these investigations will be published this year (1994). The study is being carried out by Oregon's Department of Environmental Quality to address Oregon's Water Quality Assessments as required by EPA. These baseline data are not available currently but will be published in Oregon's 305(b) Report later in 1994. Beak Consultants completed an analysis of cooling tower drift effects on water quality in Messner Pond (Appendix I). No adverse impacts to water quality in Messner Pond are expected. Potential impacts from cooling tower drift for an optional "zero discharge system," would have caused

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20-4 Joan Cabreza Environmental Protection Agency	the highest total dissolved solids (TDS) levels, and would have caused: excess algae and plant growth from high nutrient loading, and riparian plant stress from salt deposition. The report indicates that these conclusions are based on conservative assumptions that are not likely to occur. PGE is no longer considering the zero discharge system as DEQ approved their proposed land application wastewater disposal method in July 1994. PGE has committed to full mitigation in that event the adverse impacts from cooling tower drift are identified. Mitigation measures are part of the conditions imposed in the Oregon Department of Energy Proposed Order, January 10, 1994, page 31 (Appendix D). PGE's Ecological Monitoring Plan (Appendix E) will monitor effects to Messner Pond and surrounding vegetation both before and during operation of the Coyote Springs Plant. PGE has formulated several environmental impact monitoring plans to assure that impacts to water resources do not exceed anticipated levels and comply with applicable environmental standards. PGE's National Pollutant Discharge Elimination System Stormwater Discharge Permit is in Appendix G. The Project Erosion and Sedimentation Control Plan is in Appendix H. The text of the FEIS contains a summary of these documents and refers readers to reference documents and appendices for technical information.
20-6 Martha Sabol Environmental Protection Agency	**COMMENT:** 1) The EIS needs to address the relationship and impacts of the cogeneration project to the City of Boardman wellhead protection program currently under development. Specifically, the EIS needs to address the impacts the project will have on the wellhead delineation results. EPA provided funds to the City in 1991 to begin developing a wellhead protection program. These funds were used to delineate capture zones around the three Ranney collectors that supply water to the City. This study is described in “Final Report - Wellhead Protection Demonstration Project, Boardman, Oregon” October 1992, by CH2M Hill. The EIS indicates that the City will provide water to the project via current wells, and possibly from drilling additional wells. The impact of this water use on the delineation boundaries should be addressed in the FEIS.

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	RESPONSE: Martha Sabol's comments regarding the City of Boardman Wellhead Protection Project were brought to the attention of PGE, who contracted with CH2M Hill to help analyze the impact of Coyote Springs Project water use on Boardman's Wellhead Protection Area (WHPA). The water source for the plant has changed since issuance of the DEIS. These changes are described in Chapter 3 of the FEIS under the heading "Water and Sewer Systems." PGE and CH2M Hill met and discussed the Coyote Springs project with Barry Beyeler of the Boardman Public Works Director. Following this meeting Barry wrote a letter to Martha Sabol concluding, "the City of Boardman is confident that ... PGE will ... protect our wellhead area. Further, this may serve as a model for proposed future industrial development." Descriptions of wellhead protection work that has been conducted and how the wellfield will be protected through the proposed wellhead protection ordinance have been included in the FEIS as recommended by Martha Sabol.
20-7 Martha Sabol Environmental Protection Agency	**COMMENT:** Describe the impact to ponds and wetlands from increased ground water pumping.... **RESPONSE:** The ponds and wetlands are surface expressions of the water table in the alluvial aquifer. Pumping by the Port of Morrow from the alluvial aquifer will continue at existing levels when the cogeneration facility begins operating, and no new alluvial aquifer wells are planned. New Port Well #5 will be constructed in the basalt aquifer and is not expected to induce drawdown in the alluvial aquifer or have an impact on the pond and wetlands.
20-8 Martha Sabol Environmental Protection Agency	**COMMENT:** A discussion concerning potentially designated wellhead protection areas should be added to Section 4.1.8 "Protected Areas". **RESPONSE:** Wellhead protection has been added to the "Protected Areas" Section of the FEIS.

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21-3 T. Walt-Gen. Manager, PGE	**COMMENT:** Page S-10 of the DEIS notes that a shortage of temporary housing facilities in the area could occur if the two Hermiston cogeneration projects and the Coyote Springs project peak construction periods occur concurrently. While this is true, the construction schedules for the three projects are not coincident so the impact on temporary housing is not anticipated to be significant. **RESPONSE:** The commentor is correct. The Coyote Springs Project's construction schedule calls for the Coyote Springs Project to be completed prior to January 1996, the earliest date construction could begin on the Ida-West Project near Hermiston. The other cogeneration project referred to is proposed by U.S. Generating Co. of Bethesda, Md. This proposed project could begin construction as early as January 1995. The construction schedule for Coyote Springs and the U.S. Generating Co. project would overlap, although peak construction times likely would be offset. If for some unforeseen reason schedules for these projects should change and become coincident, the temporary housing supply of the area would be insufficient.
PM10 Sam Edwards	**COMMENT:** I am concerned about mist from the cooling tower creating fogging or icing conditions which would affect freeway traffic. **RESPONSE:** The frequency of cooling tower fogging and icing events were predicted by dispersion modeling. Meteorological data used in the modeling was from the Pendleton airport. The data was modified to mimic the river's influence on Boardman weather patterns: the dew point was depressed by 75 percent and nighttime winds changed to easterly. The assumed dew point depression of 75 percent represents worst case conditions and generated conservative model results. The models predicted that the cooling tower will not cause icing during any part of the year. The DEIS text on page 5-16 that says "fogging is not expected to occur on I-84" remains valid.
PM8 Sharron Barrick	**COMMENT:** Comparing the CO_2 emissions from a power plant that uses coal versus natural gas, natural gas has less CO_2 emissions.

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PM8 Sharron Barrick	**RESPONSE:** Natural gas-fired combustion turbines emit less CO_2 per average MW than any other type of fossil fuel-fired generation facility. Cogeneration units emit even less if offset emissions from steam host boilers are considered. Renewable resources have zero CO_2 emissions, however, most renewables are not cost effective at this time.
16-2 Edmund V. Clark, Ida-West Energy Co.	**COMMENT:** The fifth paragraph on Page S-5 discusses EMF. The last sentence should be rewritten: Scientific evidence has not established a cause-and-effect relationship between electric or magnetic fields and adverse health effects, so specific health risks are unknown. This ambiguous declaration is of little help to the public. A more definitive statement such as that made by John Castagna of the Edison Electric Institute would be more helpful to the reader: "In 1993, government agencies and review committees in Denmark, Finland, France and England, reviewed the published EMF health effects research, including Scandinavian studies, and stated that EMF does not pose a significant health risk." (Electric Light and Power, February, 1994.) **RESPONSE:** The comment is noted, but we prefer to leave it the way we have stated it.
18-9 Tom Meehan, Oregon Department of Energy	**COMMENT:** The ODOE Proposed Order, page 22, requires that the applicant design and construct the facility to address any estimate of peak ground acceleration which exceeds that covered by seismic zone 2B. **RESPONSE:** Reference to the ODOE Order (Appendix D) has been added to the discussion on Seismic Hazards.
18-14 Tom Meehan, Oregon Department of Energy	**COMMENT:** The third paragraph on page 5-9 (Surface Water) is no longer correct. See comment about zero discharge system for page 3-9, 10. **RESPONSE:** PGE's proposal to use the Port of Morrow land application system to dispose of project wastewater was approved by Oregon DEQ in July 1994. PGE is no longer considering a zero wastewater discharge system.

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18-15 Tom Meehan, Oregon Department of Energy	**COMMENT:** This discussion on groundwater (page 5-10) is no longer accurate. Water for the project may be coming from more than three wells. Also, Waterwatch has protested the Oregon Water Resources Department (SRD) approval of the proposed new deep basalt aquifer well discussed in paragraph three. Thus there is some uncertainty as to the ability to use water from this well. I asked PGE, the Port and WRD to make certain that there would be enough water for the project without relying on water from this new well. They have indicated that between the Port's already permitted wells and the agreement with the City of Boardman to provide the Port water which could be used for the project, there would be enough water. See proposed Order, page 14, 15; PGE letter to ODOE dated January 3, 1994. **RESPONSE:** The water needs of the Coyote Springs Cogeneration Plant will now be provided by existing Port of Morrow wells. The text of Chapter 3, The Proposed Action and Alternatives, has been revised to describe planned water and sewer systems. No new wells are needed for Coyote Springs.
18-16 Tom Meehan, Oregon Department of Energy	**COMMENT:** The values for drift rate and TDA (page 5-16, Second paragraph) may no longer be correct, if a zero discharge system is used. See comment for cooling tower, page 5-7. **RESPONSE:** PGE is no longer considering a zero wastewater discharge system.
18-18 Tom Meehan, Oregon Department of Energy	**COMMENT:** Solid Waste Disposal. See comment for page 3-12. **RESPONSE:** PGE is no longer considering a zero wastewater discharge system.
21-2 T. Walt, Gen. Manager - PGE	**COMMENT:** The DEIS notes (Page S-7) that a ". . . bank swallow colony on the plant site would be impacted by the proposed plant". The Site Certificate proposed by EFSC requires that PGE construct a fence and signs to protect the bank swallow nesting colony from disturbance during construction. The colony is outside the area affected by plant operation. **RESPONSE:** The text on the bank swallow has been rewritten to indicate the bank swallow nesting colony is not located on the plant site.

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	4.2 - Transmission System Impacts
18-19 Tom Meehan, Oregon Department of Energy	**COMMENT:** Construction of the transmission line will require removing vegetation which exceeds 12 feet in height and all Russian olive trees (which occur along the southern edge of the Messner Pond area) from the corridor. This would represent a small loss of habitat for wildlife. However, PGE's proposal to plant and maintain trees between Messner Pond and the project site would make up for this loss. **RESPONSE:** The removal of Russian olive trees in the transmission line corridor, and a resulting habitat loss has been included in the FEIS.
18-20 Tom Meehan, Oregon Department of Energy	**COMMENT:** The Oregon Department of Environmental Quality has adopted noise regulations in OAR Chapter 340, Division 35. It is my understanding that noise levels from the transmission line will be consistent with the applicable provisions of those regulations. If this is correct, it would be useful for the EIS to say this. If this is not the case, I would appreciate you advising me. **RESPONSE:** The transmission line will meet the Oregon noise standard of 50 dBA. This was stated on page 5-38. The FEIS consolidates these two discussions.
18-8 Tom Meehan, Oregon Department of Energy	**COMMENT:** We appreciate BPA's attention to, and discussion of EMF in the DEIS. Although the EFSC has not adopted any rules relating to possible EMF health effects, ODOE and EFSC consider this an important issue and are monitoring it. **RESPONSE:** Comment noted.
18-21 Tom Meehan, Oregon Department of Energy	**COMMENT:** The discussion of the impact of the three proposed power plants on BPA's transmission system, and what might be done to address the issue, was very useful. **RESPONSE:** Comment noted.

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16-5 Edmund V. Clark, Ida-West Energy Co.	**COMMENT:** In discussing the transmission capacity for the project and BPA's need to install additional transmission capacity by the year 2000, it will be important to the public to understand whether this additional capacity can be accomplished within or adjacent to existing high voltage transmission corridors. **RESPONSE:** The text of the summary has been expanded to amplify this likelihood. This topic is more thoroughly discussed under the heading 5.1.4 Transmission Capacity - Cumulative Impacts.
	4.3 Pipeline Impacts
12-5 Robert K. Arvedlund, Federal Energy Regulatory Commission	**COMMENT:** The application before FERC does not identify a fibre optic cable with the pipeline. This should be verified prior to the final environmental impact statement. **RESPONSE:** PGT has verified that it plans to place a fiber optic cable in the pipe excavation trench to provide communication services for operation of the pipeline.
17-2 David Schultz, Pacific Gas Transmission Co.	**COMMENT:** We would like to suggest that you include more environmental information and analysis on the proposed PGT pipeline extension to the plant site. An augmented review of the pipeline component of the project in the FEIS would allow the Federal Energy Regulatory Commission the option of choosing to use the FEIS as a part of its compliance with NEPA. **RESPONSE:** Discussions on the Coyote Springs Extension pipeline have been expanded in the FEIS, however FERC has recently changed their environmental review plan. PGT's Coyote Springs and Medford lateral pipelines have been removed from the EIS for the new Tuscarora Gas Company pipeline to Reno. FERC plans to issue an Draft Environmental Assessment (EA) / Finding of No Significant Impact (FONSI) on the Coyote Springs and Medford lateral pipelines. The Final EA/FONSI would be issued in the fall of 1994, after a 30-day public review period.

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	## 4.4 Other Environmental Impacts
14-1 Sharon Barrick	**COMMENT:** I have to say that I was relieved to see no threatened or endangered species listed as "at risk" as a result of this project. It is my belief that we are stewards of the land and must monitor such issues, balancing them to favor the environment and wildlife when conflicts arise. **RESPONSE:** Comment noted.
PM2 Sharon Barrick	**COMMENT:** I am reassured by the EIS's description of environmental impacts. **RESPONSE:** Comment noted.
20-5 Joan Cabreza, Environmental Protection Agency	**COMMENT:** Monitoring - The FEIS should include a discussion of monitoring for each resource category determined to be significant through the scoping process, including fisheries and water quality. A well designed monitoring plan will address how well the preferred alternative resolves issues and concerns by measuring the effectiveness of the mitigation measures in controlling or minimizing adverse effects. On page 5-7, the fish, wildlife, and vegetation monitoring plan is mentioned. EPA would like to see this plan in the final EIS, not "before construction begins." A commitment should be made to monitoring these resources. The monitoring plan should include types of surveys, location an frequency of sampling, parameters to be monitored, indicator species, budget, procedures for using data or results in plan implementation, and availability of results to interested and affected groups. The EIS should describe the feedback mechanisms which will use monitoring results to adjust standard operating procedures, and monitoring intensity at first detection of unexpected, adverse effects. This ensures that mitigation strategies will improve in the future an that unforeseen adverse effects are identified and minimized. **RESPONSE:** Several new appendices have been published in the FEIS. These appendices describe impact mitigation and monitoring plans that PGE will undertake to reduce the impact of the Coyote Springs Cogeneration Project. The Oregon Department of Energy "Proposed Order" in the matter of PGE's application for site certificate (Appendix D), defines environmental conditions and standards that have been imposed by the

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20-5 Joan Cabreza, Environmental Protection Agency	state of Oregon. The Ecological Monitoring Program is in Appendix E. The Oregon Department of Environmental Quality - Air Contaminant Discharge Permit is in Appendix F. The National Pollutant Discharge Elimination System Permit approved by Morrow County is in Appendix G. The project Erosion and Sedimentation Control Plan is in Appendix H.
	5. Consultation, Review and Permit Requirements
11-1 J.K. Palmer, Boardman City Manager	**COMMENT:** The proposed project... is in complete compliance with zoning and consistent with the City of Boardman Comprehensive Plan. **RESPONSE:** Comment noted.
11-2 J.K. Palmer, Boardman City Manager	**COMMENT:** Water, domestic wastewater and public safety issues related to the proposed plant have been thoroughly developed, discussed and satisfactorily resolved. **RESPONSE:** Comment noted.
12-5 Robert K. Arvedlund, Federal Energy Regulatory Commission	**COMMENT:** We note that two letters from the U.S. Fish and Wildlife Service, Portland Field Office, included as attachments in your biological assessment (dated November 16, 1992 and October 19, 1993), identifies the FERC as lead agency for the proposed action. We would like to clarify for the record that FERC is not the lead agency for the instant proposed action, i.e. the cogeneration plant. As a cooperating agency, the FERC's primary interest in the Coyote Springs Cogeneration Project is the cumulative impacts of the proposed action as related to the pipeline which will deliver natural gas to the cogeneration plant. **RESPONSE:** You are correct, this reference to FERC is not accurate. The abstract in the front of the EIS clearly indicates that BPA is the lead agency but this letter was sent prior to release of the EIS. BPA has sent the Biological Assessment to both NMFS and USFWS under a separate cover letter. This cover letter also identifies BPA as the lead agency for the EIS.

Code	5. Consultation Requirements
19-3 Roy Loghry, Corps of Engineers	**COMMENT:** Section 6.16 - The segment titled Section 404 should be rewritten thus: This section of the Clean Water Act is regulated by the U.S. Army Corps of Engineers. Fill and removal is regulated by the Oregon Division of State Lands under the Oregon Removal Fill Law. Generally, water filled depressions created in dry land incidental to construction activities and pits excavated in dry land for purpose of obtaining fill or sand, are not considered waters of the U.S. unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States (preamble to 33 CFR 320-33-/ page 41217 under Section 328.3: Definitions). **RESPONSE:** Section 6.16 of the FEIS has been rewritten as suggested.
20-1 Joan Cabreza, Environmental Protection Agency	**COMMENT:** Based on our review, we have rated the draft EIS EC-2 (Environmental Concerns - Insufficient Information). A copy of our rating system is enclosed. EPA is concerned that there is only one action alternative, and no site specific options with which to chose a least environmentally damaging alternative. The National Environmental Policy Act stipulates that a thorough alternatives analysis is an integral part of the EIS. . . . This rating and a summary of our comments will be published in the Federal Register. **RESPONSE:** BPA's project environmental coordinator met with John Bregar to go over EPA's concerns. Actions that BPA planned to take in response to EPA's comments were summarized in an April 28, 1994 letter (enclosed following EPA's comment letter). BPA's has made changes in the FEIS and has published several additional appendices that provide supporting data and PGE monitoring plans. BPA responses to individual EPA comments (in this section of the FEIS) explain how the FEIS has been modified. Based on communication with EPA, BPA expects that EPA's rating of the FEIS will be "Lack of Objection."
20-9 Martha Sabol, Envronmental Protection Agency	**COMMENT:** Delete section 6.17.2. The critical aquifer protection program under the Safe Drinking Water Act expired in 1988. However, the Sole Source Aquifer Program is still in effect for anyone desiring to petition EPA to designate an area as sole source. **RESPONSE:** The referenced section has been deleted.

Code	
19-4 Roy Loghry, Corps of Engineers	**COMMENT:** Add the following to the last of the first sentence in section 6.18.1, "in the absence of Congressional consent and approval of the plans of the Chief of Engineers and Secretary of the Army." **RESPONSE:** The FEIS has been rewritten as suggested.
	6. New or Corrected Information
10-1 Jerry Anderson	**COMMENT:** Map 8 identifies Horn Butte (#13) area of critical environmental concern as being across the river in WA State. Map 9 identifies this area (#14) both in Washington State and in Gilliam County, Oregon. Horn Butte (BLM) is located in Gilliam Co. Oregon, Section 11, Township 2N, RANGE 22E. **RESPONSE:** Map 8 in the DEIS did incorrectly locate Horne Butte in Washington. Map 9 identified Horne Butte correctly as being in Oregon. The commentor confused State Route 14 in Washington for Horne Butte. To avoid this confusion, we have deleted State Route 14 from the revised map. Also the maps referred to have been changed. A new Surface Water and Wetlands map was added in the FEIS so the maps you refer to now been renumbered (one number larger).
10-2 Jerry Anderson	**COMMENT:** Page 4-12, paragraph 5 - Carty Reservoir is southwest of the project site. **RESPONSE:** The text of the FEIS has been revised as noted.
10-3 Jerry Anderson	**COMMENT:** Table 5-8 Boardman Research Natural Area. This area is located on the Boardman Bombing Range. The 3 NRA's are at least 5-miles from the project site and some are close to 10-miles. See map 8 (#2). **RESPONSE:** Comment noted. The referenced map has been changed.
10-4 Jerry Anderson	**COMMENT:** On Map 8 Lindsay Grasslands (#18) is actually located on the Pacific Gas Pipeline Route, not in the Boardman Bomb Range. Map 9 shows the correct location.

Code	6. New or Corrected Information
12-3 Robert K. Arvedlund, Federal Energy Regulatory Commission	**RESPONSE:** The referenced map has been changed.
	COMMENT: Page 3-17, paragraph 3: Change the sentence beginning with "FERC must issue a permit. . . " to read: FERC must issue a Certificate of Public Convenience and Necessity for the proposed pipeline project." **RESPONSE:** The FEIS incorporates this recommended wording change.
12-4 Robert K. Arvedlund, Federal Energy Regulatory Commission	**COMMENT:** Page 4-40, paragraph 6: Change "early 1994" to "the fall 1994". **RESPONSE:** This wording change has been noted. BPA has also updated the discussion to reflect FERC plans to separate PGT's Coyote Springs and Medford laterals from the EIS on the Tuscarora pipeline to Reno, Nevada. The FEIS notifies readers of your plan to release an Environmental Assessment/FONSI for the Coyote Springs/Medford lateral in the fall of 1994, following a 30-day public comment period.
16-1 Edmund V. Clark, Ida-West Energy Co.	**COMMENT:** Revise the second paragraph of Page S-1, first sentence to make it clear that PGE has asked BPA to transmit power for phase I of its Project only. **RESPONSE:** The text of the FEIS has been written to clearly indicate BPA is currently considering whether to wheel power for only Phase I of the Coyote Springs Cogeneration Project. Should PGE at a future date ask BPA to wheel power from the second unit, BPA would conduct electrical system studies to determine if sufficient transmission capacity exists to integrate the second unit. If capacity were found to be insufficient, options to increase capacity would be developed. (Also see Section 5.1.4, Transmission Capacity - Cumulative Impacts.)
16-7 Edmund V. Clark, Ida-West Energy Co.	**COMMENT:** Page 2-3, The last paragraph on page 2-3 should be updated in the FEIS to reflect the current status of the Hermiston Power Project. Negotiation of the PPA was completed in March 1994. **RESPONSE:** Comment noted. The text has been updated.

Code	6. New or Corrected Information
17-1 David Schultz, Pacific Gas Transmission Co.	**COMMENT:** Page S-1, 3rd paragraph, 3rd sentence, change, "a spur" to "a pipeline extension"; Page S-2, Section S-2, 3rd paragraph, change "28.5-km (17.7-mile) to "29.8-km (18.5-mile)"; change "near Stanfield" to "the Canadian/Idaho border" and on Page 1-1, map add pipeline to map. **RESPONSE:** The text of the FEIS incorporates these recommended changes.
18-2 & 18-3 Tom Meehan, Oregon Depart- ment of Energy	**COMMENT:** The first sentence on page S-1, Summary. in the second paragraph is unclear. It appears some words were omitted. ON page 3-1, section 3.1 the second to the last sentence of the first paragraph is unclear. **RESPONSE:** The text of the FEIS has been modified to enhance clarity where noted.
19-1 Roy Loghry, Corps of Engineers	**COMMENT:** The second sentence of the segment discussing Existing Land Use (Section 4.1.1) needs to be revised. The quarry still exists (or at least in part) according to your consultant, Chris Thoms. **RESPONSE:** The referenced text has been revised.
19-2 Roy Loghry, Corps of Engineers	**COMMENT:** In the segment that discusses Surface Water (Section 4.1.2) under the heading Water Resources (page 4-7) the discussion of gravel mining ponds is not consistent with the comments in Section 4.1.1. **RESPONSE:** The text of the FEIS has been changed.
19-5 Roy Loghry, Corps of Engineers	**COMMENT:** The National Wetland Inventory Map should be reviewed for the project area. A copy of that map is attached as an enclosure and indicates more wetland associated with Messner Pond than shown on Map 4. **RESPONSE:** A new Surface Water and Wetlands map (Map 8) has been added in the FEIS. It combines information taken from the National Wetlands Inventory Map and BPA field delineated wetland boundaries. Wetlands identified on the 1982 wetland inventory maps have been altered.

Code	6. New or Corrected Information
12-1 Robert K. Arvedlund, Federal Energy Regulatory Commission	**COMMENT:** Page 1-2, paragraph 3: Change the sentence beginning with "FERC will prepare an EIS. . . " to read: FERC will prepare an EIS for PGT's second Expansion Project which proposes 1) 104 miles of new 12-inch-diameter pipeline in Oregon (Coyote Springs Lateral and the Medford Lateral) ; and 2) the upgrade of two compressor stations located in Idaho and Washington." **RESPONSE:** A letter dated June 10, 1994 from Robert Arvedlund of the FERC Environmental Review and Compliance Branch, states that PGT amended its application to FERC on May 31, 1994. This amendment legally separated PGT's relationship with Tuscarora Gas Transmission Company. Linkage between the Coyote Springs and Medford laterals and the Tuscarora pipeline having been severed, PGT and FERC decided to complete an Environmental Assessment (EA) on the Coyote Springs and Medford Laterals. An EA/FONSI is scheduled for completion this fall after a 30-day comment period. Discussions on FERC's environmental coverage plans have been updated in the FEIS.

Public Comment Letters

Y BPA
LVEMENT

PGE/BPA Coyote Springs Cogeneration Project - Draft EIS Coyote-02-008

2-8-94

AREA DISTRICT
2

You may use this form to comment on the draft EIS or Summary, or you may comment by letter, phone, or in person at the open house. Use the back of this sheet if you need more room.

"I'D LIKE TO TELL YOU . . ."

1. Of the two choices offered: (1) power from the Coyote Springs Cogeneration Plant would be wheeled (transported) over BPA electrical transmission lines, or (2) No Action (would not wheel the power); I prefer: Wheel the power 008-1

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PUBLIC INVOLVEMENT
LOG #:
RECEIPT DATE:
2/1/94
AREA: DISTRICT

2. You could improve the choices by:

3. Environmental impacts would be less if you:

4. I didn't understand:

5. I also have these comments: I assume the plant will have back-up STORAGE of diesel or #6 OIL FOR USE IN THE EVENT OF A GAS CURTAILMENT. 008-2
IF SO, WHAT ARE THE POTENTIAL ADVERSE IMPACTS OF THAT?
HOW WILL THE OWNERS PREVENT LEAKAGE OF THOSE TANKS AND HOW WILL THEY RESPOND (I.E. CLEAN UP) TO A TANK RUPTURE?
~~??~~ WILL THE OWNERS FILE PREVENTION AND CONTINGENCY PLANS?

Your comments will be addressed in the final EIS. Thank you.

PGE/BPA Coyote Springs Cogeneration Project - Draft EIS

Name M. PEPPER

Address 6 BEACH DR VANCOUVER WA 98661

Please use the enclosed postage-paid envelope or send by March 21, 1994 to:

Bonneville Power Administration
Public Involvement Manager - ALP
P.O. Box 12999
Portland, OR 97212
(800) 622-4519

PGE/BPA Coyote Springs Cogeneration Project - Draft EIS

Coyote 02-009
2-8-94
W

You may use this form to comment on the draft EIS or Summary, or you may comment by letter, phone, or in person at the open house. Use the back of this sheet if you need more room.

"I'D LIKE TO TELL YOU . . ."

1. Of the two choices offered: (1) power from the Coyote Springs Cogeneration Plant would be wheeled (transported) over BPA electrical transmission lines, or (2) No Action (would not wheel the power); I prefer:

009-1 Wheel Power over BPA Lines.
I Support Coyote Springs

2. You could improve the choices by:

3. Environmental impacts would be less if you:

4. I didn't understand:

5. I also have these comments:

Your comments will be addressed in the final EIS. Thank you.

PGE/BPA Coyote Springs Cogeneration Project - Draft EIS

Name W. C. Hendrip

Address R-1 B 3/A Boardman, Or. 97818

Please use the enclosed postage-paid envelope or send by March 21, 1994 to:

Bonneville Power Administration
Public Involvement Manager - ALP
P.O. Box 12999
Portland, OR 97212
(800) 622-4519

PGE/BPA Coyote Springs Cogeneration Project - Draft EIS

You may use this form to comment on the draft EIS or Summary, or you may comment by letter, phone, or in person at the open house. Use the back of this sheet if you need more room.

"I'D LIKE TO TELL YOU . . ."

1. Of the two choices offered: (1) power from the Coyote Springs Cogeneration Plant would be wheeled (transported) over BPA electrical transmission lines, or (2) No Action (would not wheel the power); I prefer: ______

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PUBLIC INVOLVEMENT
LOG #: COYOTE002-010
RECEIPT DATE:
2-14-94
AREA: DISTRICT

2. You could improve the choices by: ______

3. Environmental impacts would be less if you: ______

4. I didn't understand: ______

5. I also have these comments: Map 8 identifies (13) Horn Butte area
010-1 of critical Environmental Concern as being across the river in WA State. Map 9 Identifies this area (14) both in WA state and in Gilliam Co Oregon. Horn Butte (BLM) is located in Gilliam Co. Oregon Section 11, Township 2N Range 22E.
Page 4-12 paragraph 5 - Carty Reservoir is southwest
010-2 of the project site.

Your comments will be addressed in the final EIS. Thank you.

Over

PGE/BPA Coyote Springs Cogeneration Project - Draft EIS

Also on Map 8 (18) Lindsay Grasslands - actually located on the Pacific Gas Pipeline Route, not in the Boardman Bomb Range. Map 9 shows correct location. 010-3

Table 5-8 Boardman Research Natural Area

This area is located on the Boardman Bomb Range 010-4
The 3 NRA's are at least 5 miles from project site and some are close to 10 miles. See Map 8 ☺

Name Jerry Anderson Morrow SWCD

Address P.O. Box 127 Heppner, OR 97836

Please use the enclosed postage-paid envelope or send by March 21, 1994 to:

Bonneville Power Administration
Public Involvement Manager - ALP
P.O. Box 12999
Portland, OR 97212
(800) 622 4519

City of Boardman

TOWN SQUARE
P.O. BOX 229
BOARDMAN, OREGON 97818
TELEPHONE (503) 481-9252

COYOTE-02-011
RECEIPT DATE
2-16-94

February 10, 1994

Bonneville Power Administration
Public Involvement Manager - ALP
PO Box 12999
Portland, OR 97212

In re: EFBG

The Boardman City Council, at the regularly scheduled February 1, 1994 meeting directed that the following comments be submitted on behalf of the City regarding the Coyote Springs co-generation project.

011-1 The proposed project, which will build a Portland General Electric plant upon a Port of Morrow site, is in complete compliance with zoning and consistent with the City of Boardman Comprehensive Plan.

011-2 Water, domestic wastewater and public safety issues related to the proposed plant have been thoroughly developed, discussed and satisfactorily resolved.

011-3 The City of Boardman supports the project.

Respectfully,

J. K. Palmer
City Manager

Federal Energy Regulatory Commission
Washington, D.C. 20426

OFFICE OF PIPELINE AND PRODUCER REGULATION

FEB 1 7 1994

In Reply Refer To:
OPPR/DEMEA/ECB
Pacific Gas Transmission
Company
Docket No. CP93-618-000

RECEIVED BY BPA
PUBLIC INVOLVEMENT
LOG #:
RECEIPT DATE:
2/22/94
AREA DISTRICT

Mr. Ken Barnhart, EIS Coordinator
Bonneville Power Administration
Post Office Box 3621
Portland, Oregon 97208-3621

Dear Mr. Barnhart:

We have reviewed your "Draft Environmental Impact Statement (DEIS) for the Coyote Springs Cogeneration Plant" and have the following comments:

Page 1-2, ¶ 3: Change the sentence beginning with "FERC will prepare an EIS..." to read: "FERC will prepare an EIS for PGT's second Expansion Project which proposes 1) 104 miles of new 12-inch-diameter pipeline in Oregon (Coyote Springs Lateral and the Medford Lateral); and 2) the upgrade of two compressor stations located in Idaho and Washington." 012-1

Page 3-17, ¶ 2: The application before FERC does not identify a fibre optic cable with the pipeline. This should be verified prior to the final environmental impact statement. 012-2

Page 3-17, ¶ 3: Change the sentence beginning with "FERC must issue a permit..." to read: "FERC must issue a Certificate of Public Convenience and Necessity for the proposed pipeline project." 012-3

Page 4-40, ¶ 6: Change "early 1994" to "the fall 1994". 012-4

We also note that two letters from the U.S. Fish and Wildlife Service, Portland Field Office, included as attachments in your biological assessment (dated November 16, 1992 and October 19, 1993), identifies the FERC as lead agency for the proposed action. We would like to clarify for the record that FERC is not the lead agency for the instant proposed action, i.e. the cogeneration plant. As a cooperating agency, the FERC's 012-5 primary interest in the Coyote Springs Cogeneration Project is the cumulative impacts of the proposed action as related to the pipeline which will deliver natural gas to the cogeneration plant.

We appreciate the opportunity to review and comment on your DEIS. If you have any questions regarding the above comments, please contact Alisa Lykens, Project Manager, at (202) 208-0766. Thank you.

Sincerely,

Bob Arvedlund

Robert K. Arvedlund, Chief
Environmental Compliance and
Project Analysis Branch

cc: Tom Cottingham, BLM, Klamath Falls District Office

Boardman-North Morrow County

CHAMBER OF COMMERCE

P.O. Box 1
Boardman, Oregon 97818
(503) 481-3014

February [illegible], 1994

Bonneville Power Administration

RE: COYOTE SPRINGS CO-GENERATION PROJECT

To Whom It May Concern:

The Boardman Chamber of Commerce wishes to go on record as unanimously supporting the Coyote Springs Co-Generation Project.

The project reports have been reviewed. The attention to detail regarding the local environment and other impacts on the community have been reviewed. It is felt that this project is a welcome edition to the community. On behalf on the Chamber of Commerce, and as local voters, we wish to strongly support this project and feel free to let us know if there is any further information from the local community we can give to you regarding any question about this project. 013-1

Respectfully,

Robert J. [illegible], M.D.
President, Boardman Chamber of Commerce

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PUBLIC INVOLVEMENT
LOG #: COYOTE-02-013
RECEIPT DATE:
3-7-94
AREA: DISTRICT

I appreciate the opportunity to put my "two bits" in regarding the Coyote Springs Project at Boardman. Our entire church congregation was invited to read the Environmental Impact Statement provided by the BPA, not that our pastor has a bias either way, but because it is something responsible,caring members of a community do.

014-1 I have to say I was relieved to see no threatened or endangered species listed as "at risk" as a result of this project. It is my belief that we are stewards of the land and must monitor such issues, balancing them to favor the environment and wildlife when conflicts arise.

014-2 In fact that is one reason I strongly favor the concent of cogeneration plants utilizing natural gas. It represents an alternative source of energy to fossil fuels which generate higher levels of "greenhouse" gases. People who share my concern for Global warming and greenhouse effects will agree that alternatives to coal and petroleum combustion deserve consideration, since natural gas produces less greenhouse gases than fossil fuels. I learned an interesting fact from you EIS; according to one study performed by JC Sheppard, in the Journal of Geophysical Res., methane produced from natural gas pipelines and mining operations amounts to less than 10% of methane emitted from natural sources such as forest floors,swamps, tundra, temnites and cows!

014-3 It appears that PGE does not plan CO_2 offset mitigation at this time, but it is noteworthy that Boise Cascade and Potlatch Farms are developing almost 30,000 acres of tree farms nearby, which will produce substantial O_2 output. Indeed anyone who flies over this so-called high desert area, viewing the green circles below must conclude that corporate farms are producing significantly greater amounts of Oxygen than the native flora, sage, ragweed, russian thistle, tumbleweed, and wheatgrass.

I realize that I am citing other, outside industry, in our community, but isn't that the point of Environmental Studies? How connected everything is?

I believe this project represents an opportunity for us to develop 014-4
greater diversity in our energy options, and that that is good. Coyote Springs project will begin the process of finally unlocking the potential of this region. I look forward to the prospect of this development, because I believe that people here will meet the challenge to grow and change in a positive way. I hope this project is endorsed for immediate approval since everyone is served well by it: the addition of 440 average megawatts of power, an offset to Trojan's closure, a new source which will allow us to meet energy needs in the Pacific Northwest, networking industrial needs already existing in our industrial park, the Port of Morrow, and stimulating growth in an area of Oregon, that will provide economic diversity at a time when our state and region needs it most.

Thank you,

Sharon A Barrick

(respectfully,)

Sharon. A. Barrick

PGE/BPA Coyote Springs Cogeneration Project - Draft EIS

You may use this form to comment on the draft EIS or Summary, or you may comment by letter, phone, or in person at the open house. Use the back of this sheet if you need more room.

"I'D LIKE TO TELL YOU . . ."

014-5 1. Of the two choices offered: (1) power from the Coyote Springs Cogeneration Plant would be wheeled (transported) over BPA electrical transmission lines, or (2) No Action (would not wheel the power); I prefer: #1 - I strongly support this project!

2. You could improve the choices by:

3. Environmental impacts would be less if you:

COYOTE-02-014

3-7-94

4. I didn't understand:

5. I also have these comments: See enclosed

Your comments will be addressed in the final EIS. Thank you.

Thanks for the informal format - It was informative & I felt I could express my opinion freely! SOB

Columbia Basin Institute

CBI

RECEIVED BY BPA
PUBLIC INVOLVEMENT
LOG #: [illegible]
RECEIPT DATE:
3-18-94
AREA: DISTRICT

TO: Bonneville Power Administration
FROM: Rick Gove, Columbia Basin Institute
DATE: March 18, 1994
RE: Coyote Springs Cogeneration Project DEIS Comments

Upon review of the Coyote Springs Cogeneration Project DEIS, CBI submits the following comments.

ENVIRONMENTAL CONSEQUENCES

Groundwater

This section attempts to explain how water for the CSCP will be acquired. However, it is very unclear in its explanation and needs clarification. For instance, the first paragraph on page 5-10 states the water will be supplied from "three deep and shallow groundwater wells." It then goes on to state that two new wells are in the application stage. There is no connection between these two statements as they are presented. Is the CSCP dependent upon the wells under application? Are the current wells described in the first sentence supposed to provide all the water or is the plan to supplement the water requirement with water from the wells under application? If the wells under application are denied, will the three mentioned wells be able to provide adequate water for the life of the project? If not, where will the water come from? (See Cumulative Impact section.) 015-1

The section goes on to state in the third paragraph that the deep basalt aquifer well permit has been granted with conditions; one of them being that if the water is lowered more than 25 feet, the well would not be used until water levels recover. If this occurs, will the CSCP be required to obtain water from another source? If so, what is the source and what are the impacts? It is common knowledge and more than reasonably foreseeable that the groundwater aquifers in this area are rapidly depleting. Therefore, there should be much more detail in this section concerning exactly what groundwater aquifers are being depended on and to what extent, and what will happen if these groundwater sources cannot provide the water required by the CSCP. 015-2

CUMULATIVE IMPACTS

Groundwater

This section is lacking in substance and needs to be significantly developed in three different areas. First, there needs to be particular identification of other past present and reasonably foreseeable actions; second, particular types of cumulative impacts must be identified; and third, the analysis must 015-3

P.O. Box 3795 • Portland, OR 97208 • (503) 222-6541 • FAX: (503) 222-6436

provide a greater level of detail for each identified impact.

1. There should be specific references to other actions which will cause cumulative impacts and an explanation of why this new action presents the threat of a cumulative impact.

The definition of "cumulative impact," stated on page 5-48, spells out what a cumulative impact analysis should analyze in order to determine if there will be such impacts. The definition states "the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions." Despite the acknowledgment of this clearly stated definition, the DEIS on the very next page offers a very simplistic sentence in the groundwater impact section which states "The Coyote Springs Plant, together with other proposed power plants and industrial developments in the Columbia Basin, could impact groundwater resources." The sentence is vague, overbroad and fails to provide any substantive information by which the decision maker can make an informed decision as to what potential impacts may result from further withdrawals from the shallow groundwater aquifers in the Boardman area.

The definition specifically states that "past, present, and reasonably foreseeable future actions" must be considered in an incremental sense. This demands a closer look at **all** present water withdrawal permits pending, including irrigation, residential, commercial and industrial users and **all** past permits granted which allow groundwater withdrawals from the aquifers in this area.

Another very important issue which must bear closer scrutiny is the proximity between the groundwater wells that the CSCP withdrawals will come from and the designated critical groundwater areas in the Boardman area. Such an analysis should also consider the current status of the groundwater aquifers to be used by the CSCP and if they are in danger of reaching a critical state of depletion.

015-4 2. There needs to be an identification of the different types of cumulative impacts that may result from this action. The analysis must then give detailed information as to how the proposed action will impact the discussed area (groundwater), considering the proposed action in an incremental sense with the other identified actions discussed in Point #1.

The DEIS only identifies one type of cumulative impact in the groundwater section. It is in the paragraph which states that because the shallow aquifers have a hydrological connection to the Columbia River, there is a potential impact on threatened and endangered species. Although this is the only statement in the groundwater section which even approaches the level of sophistication required for a cumulative impact analysis, it is still lacking the necessary detail upon which an informed decision on the proposed action can be made.

The second paragraph of the groundwater section goes on to state that *the well may face restrictions in future years.* The preceding paragraph states that future groundwater rights may be restricted because of the rapid rate of decline of Columbia River aquifers. However, the analysis provides the reader with absolutely no information as to how the CSCP will operate if the groundwater aquifer it is withdrawing from is depleted to the point that CSCP's right is limited or eliminated due to claims of senior right holders. Clearly if this DEIS states that this possibility exists, it is reasonably foreseeable that such an event will occur. Yet, the cumulative impact section simply raises the issue and *fails to supply any substantive information concerning* what water source the CSCP will use and what the impacts of the unmentioned water source would be on the threatened and endangered fishery. 015-5

Other types of potential cumulative impacts which should be analyzed and discussed are impacts to local water supplies, the potential of impacts to critical groundwater areas located nearby, impacts to deep aquifers which may result from drawdowns in the shallow aquifers, impacts to other fish and wildlife in the area which are dependent on the groundwater or hydrological connected surface water, impacts on irrigation operations in the area which may result from depleted groundwater aquifers, and impacts on Columbia River flows due to the hydrological connection. Again, *these impacts must be considered in light of past, present* and reasonably foreseeable future actions which also impact the groundwater resource. 015-6

One area which BPA surprisingly does not analyze as a cumulative impact is the potential impact on BPA's ability to generate hydropower due to interruptions in surface flows of the Columbia River. This impact has a definite measurable effect on BPA rates. The ability for BPA to produce cheap hydropower is reduced when water is withdrawn from the Columbia, its tributaries *or shallow aquifers which have a hydrological connection to the* river or tributaries, because there is less water going through the turbines. To meet its firm load requirements in low water years, BPA must then replace this lost cheap power with much more expensive power produced by thermal resources. This cost is passed on to the region's ratepayers in the form of rate increases. 015-7

The DEIS provides no analysis of the potential impact on electric rates from the above described potential loss. Withdrawing water for the production of thermal power, at the cost *of decreasing the potential for cheap hydropower should be* analyzed. Though it may well be an acceptable trade-off in this case, without analysis and research the decision maker has no basis to make an informed decision. Even if it is an acceptable trade-off, it is nevertheless an impact which BPA should be calculating any time it is analyzing the impacts of an action which may potentially impact Columbia River flows, especially in a cumulative type of analysis.

3. For each type of cumulative impact identified, there 015-9

should be a detailed discussion of such things as the quantity of water being used and the quantity of water other actions are using or are proposing to use. Using these real numbers, calculations and estimates should be made that give the decision maker more substantive knowledge of the potential resulting impacts.

For example, the impacts which CBI has identified in the previous section #2, should have such basic information as: how much water is being withdrawn for the Coyote Springs Project?; how much water are the two other proposed cogeneration projects in the area using?; are there any other past present or reasonably foreseeable future withdrawals that are or will be taking water from these wells or the Columbia River?; and if so, how do all these actions, in an incremental sense, impact the groundwater resource?

015-7 For a calculation of the potential lost hydropower and how much it will cost BPA ratepayers, the DEIS should contain the following analysis. Assuming that the entire water requirement of the CSCP is supplied by groundwater wells which have a hydrological connection to the Columbia River, the annual amount of water withdrawn from the river will be 4,300 acre-feet. This amount of water in the John Day pool, when dropped through turbines, would produce just over 1 million kilowatt hours of electricity. If the withdrawal is made for the CSCP, BPA will then have to replace the 1 million kilowatt hour loss by purchasing an equivalent amount of electricity from more expensive thermal resource power producers. According to BPA's 1993 Final Rate Proposal, such purchases have an average cost 60.64 mills per kilowatt hour. Thus, the annual cost to replace this withdrawal will be just over $63,000. Projected over the 30 year life of the project, replacement power will cost BPA and consequently its ratepayers $1.9 million in 1993 dollars.

In a cumulative comparison with other power projects and other water withdrawals in the Columbia Basin, this proposed action will have a definite if not substantial incremental contribution to public costs to the region in the form of higher electricity rates. CBI has calculated the lost hydropower and its cost for the Hermiston Generating Project, another cogeneration facility proposed in the same area, to be $2.1 million over the 30 year life of that project. There is another project being proposed in Hermiston which will require roughly the same amount of water and will thus have a similar impact on the Federal Columbia River Hydropower System. There are also some proposed cogeneration plants in Washington, some of which will require Columbia River withdrawals. BPA must begin to acknowledge the cumulative potential costs of these seemingly small individual withdrawals which are being imposed on purchasers of BPA electricity.

Respectfully submitted,

Rick Gove
Columbia Basin Institute

I-WEST ENERGY COMPANY P.O. Box 7867, Boise, Idaho 83707 • 1199 Shoreline Lane, Suite 310, Boise, Idaho 83702 • (208) 336-4254 FAX (208) 336-9795

March 21, 1994

016

Bonneville Power Administration
Public Involvement Manager - ALP
P.O. Box 12999
Portland, OR 97212

RECEIVED BY BPA PUBLIC INVOLVEMENT
RECEIPT DATE
DISTRICT

RE: *Comments on draft EIS for Coyote Springs Cogeneration Project*

Dear Sir/Madame:

This letter provides our comments on the Coyote Springs Cogeneration Project's draft Environmental Impact Statement (DEIS), Document DOE/DEIS-0201, January 1994. In general, the document adequately discussed the impacts and potential impacts of the Coyote Springs Cogeneration Project. Our comments, listed by page number, are set forth below.

__Page S-1__

016-1 The second paragraph, first sentence must make it clear that PGE has asked BPA to transmit power for phase I of its Project only.

__Page S-5__

016-2 The fifth paragraph discusses EMF. The last sentence should be re-written: *Scientific evidence has not established a cause-and-effect relationship between electric or magnetic fields and adverse health effects, so specific health risks are unknown.* This ambiguous declaration is of little help to the public. A more definitive statement such as that made by John Castagna of the Edison Electric Institute would be more helpful to the reader: "In 1993, government agencies and review committees in Denmark, Finland, France and England, reviewed the published EMF health effects research, including the Scandinavian studies, and stated that EMF does not pose a significant health risk."[1]

__Page S-7__

016-3 Air quality impacts are discussed at the bottom of S-7. Only the more significant potential impacts should be discussed in the Summary. It may be confusing to the public to mention

[1] __Electric Light & Power__, February, 1994.

COMMENTS
Coyote Springs Cogeneration Project
Draft DEIS
March 21, 1994
Page 2

methane as it's done here since the Coyote Springs Project will normally release no methane directly to the atmosphere. Section 6.10 of the DEIS does a good job of discussing potential fugitive methane emissions and that should be adequate. It would be appropriate in this paragraph, however, to mention that CO_2 is a greenhouse gas and is formed in the combustion of methane. It may also be worthwhile to mention that CO_2 emissions at the Coyote Springs Cogeneration will be minimized through: (1) The use of advanced power plant technology to achieve a high efficiency and thereby minimize CO_2 per unit of electricity produced, (2) providing steam from the power plant to local food processors to allow the shut down of the food plant boilers, and (3) using natural gas as a primarily fuel. The ratio of carbon to other atoms is lower in natural gas than coal and other hydrocarbon fuels which reduces CO_2 emissions per kWh generated.

Page S-9

Under **Global Warming**, the DEIS states: *Greenhouse gases contribute to Global Warming.* This statement is very misleading in that the study of greenhouse gases and their effect on climate change is subject to substantial controversy and uncertainty and it gives the reader the impression that it is a fact. A March 1992, Gallop poll found that only 17% of climatologists said they believe human-induced warming has occurred and 53% said they remain convinced the jury is still out on global warming.[2] 016-4

The second paragraph under Global Warming is not appropriate because the potential effect of greenhouse gases on climate change is global, therefore, the fact that three projects are being sited in the Boardman-Hermiston area is not relevant to the impact on climate change. The paragraph also states that the projects will emit a fairly large amount of greenhouse gas. The reader really has no way to ascertain whether the term "fairly large" is significant to potential effects on climate. In reality, the contribution to atmospheric CO_2 from the three projects in the Boardman-Hermiston area is insignificant when compared to existing fossil fuel capability worldwide plus the numerous large new coal-fired projects planned for China and other countries throughout the world, not to mention the large contribution from natural sources.

In discussing the transmission capacity for the project and BPA's need to install additional transmission capacity by the year 2000, it will be important to the public to understand whether this additional capacity can be accomplished within or adjacent to existing high voltage transmission line corridors. 016-5

[2] The Electricity Journal, February 1994, p. 68.

COMMENTS
Coyote Springs Cogeneration Project
Draft DEIS
March 21, 1994
Page 2

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[2] The Electricity Journal, February 1994, p. 68.

COMMENTS
Coyote Springs Cogeneration Project
Draft DEIS
March 21, 1994
Page 4

Thank you for the opportunity to comment on the Coyote Springs DEIS. Please telephone if we can clarify any of our comments.

Sincerely,

Edmund V. Clark

Edmund V. Clark
Vice President
Thermal Projects

cc: R. Goranson - BPA, Walla Walla

c:\docs\clark\bpp\coy3-21.com

PGT

Pacific Gas Transmission Company

RECEIVED BY BPA
PUBLIC INVOLVEMENT
LOG #: COYOTE-02-017
RECEIPT DATE:
03-22-94
AREA: DISTRICT

March 18, 1994

Mr. Kenneth A. Barnhart
Project Environmental Coordinator
Coyote Springs Cogeneration Plant
Bonneville Power Administration
P.O. Box 3621
Portland, Oregon 97208

Dear Mr. Barnhart:

PGT has reviewed the Draft Environmental Impact Statement Coyote Springs Cogeneration Project, Morrow County, Oregon, dated January 1994, DOE/DEIS-0201, and provides the attached comments.

In addition to our specific comments, we would like to suggest that you include more environmental information and analysis on the proposed PGT natural gas pipeline extension to the plant site. An augmented review of the pipeline component of the project in the Final Environmental Impact Statement (FEIS) would allow the Federal Energy Regulatory Commission the option of choosing to use the FEIS as a part of its compliance with NEPA.

Thank you for the opportunity to comment. If you have any questions regarding our comments, please contact John McCullough, Senior Environmental Planner, 415/973-0927.

Sincerely,

David J. Schultz
Project Manager
PGT 1995 Construction Program

Attachment

cc: Bob Arvedlund, FERC

160 Spear Street ■ San Francisco, California 94105-1570

COMMENTS ON BPA DEIS
Coyote Springs Cogeneration Project

Page S-1, 3rd para., 2nd sent.	change "a spur" to "a pipeline extension"
Page S-2, Sect S-2, 3rd para.	change "28.5-km (17.7-mile)" to " 29.8-km (18.5-mile)" ; change "near Stanfield" to " the Canadian/Idaho border"
Page 1-1, map	add pipeline to map
Page 1-2, 3rd para	change "Second Northwest Expansion Project" to "1995 Construction Program"; change "140 km (90 miles)" to " 169 km (105 miles)", add "no new" before "compressor"; delete last sentence.
Page 2-1, last sent.	Sentence is incomplete
Page 2-2, 3rd para	change "Stanfield" to Canadian/Idaho border"
4th para	Update this paragraph as follows:

The Federal Energy Regulatory Commission (FERC) must review and approve all interstate pipelines. FERC requires that certificate applications for review and approval of new pipeline projects include "Resource Reports" containing environmental information. PGT has provided these reports to FERC in its certificate application and to BPA for use in the preparation of this EIS. The FERC may undertake an additional environmental analysis of the pipeline and/or incorporate this FEIS as part of its compliance with NEPA.

Page 3.2, 1st para	change "28.5 km (17.7 mile)" to "29.8 km (18.5 mile)"; change "Stanfield" to "Canadian/Idaho border"
Map 1 after Page 3-2	change pipeline route as shown
Map 2 after Map 1	add pipeline route as shown
Page 3-8, last para	Sentence beginning with "Buswork..." is repeated
Map 3 after Page 4-2	change pipeline route as shown

Map 4 after Map 3	change pipeline route as shown
Map 5 after Map 4	change pipeline route as shown
Map 6 after Map 5	change pipeline route as shown
Page 4-3, 3rd line	Is traffic count "3100" correct for Columbia Ave.? It seems high.
Map 7 after Page 4-4	Map shows #14 but not defined in legend; there is no #13 recreation site shown on map; change pipeline route as shown
Page 4-14, Employ.	The number of 9.5 percent unemployment (July 1, 1992) conflicts with PGT RR which states 1993, Jan of 13.5; perhaps a different base was used; that's a big jump for six months
Page 4-20, last word	For clarification, join this sentence "The..." with the previous sentence and connect the two sentences with the word "where"
Map 8 after page 4-36	change pipeline route as shown;
Map 9 after page 4-40	Map identifies a location for Hillside milkvetch but plant list in Appendix does not show this species as recorded; map shows Robinson's onion near plant site, but DEIS states that is was not found and is probably extinct
Table 5-1	Possible duplicate entry for "Soils"
Map 11	change pipeline route as shown
Page 5-28, 3rd para Line 4	change "This" to "These"
Page 5-30	delete blank spaces in bullets
Page 5-38, 1st para	Word is missing after "fencing"

2

Table 5-12	Correct table as shown on enclosed copy
Page 10-3,	Delete space in CO definition
Page 10-5	Definition for "EIS" should read "Abbreviation for Environmental Impact Statement"
Page 10-7	Historic Preservation. Add to end of sentence " ,relating to historic resources."
Page 10-8	Loop. Hyphen missing in the word "outgoing."
Page 11-3	Index. Pacific Gas Transmission Company is listed twice.

3

Oregon

RECEIVED BY BPA
PUBLIC INVOLVEMENT
LOG #: COYOTE-02-018
RECEIPT DATE:
3/31/94
DISTRICT

DEPARTMENT OF
ENERGY

March 30, 1994

Ken Barnhart-EFBG
BPA
P. O. Box 3621
Portland, OR 97208

Dear Ken:

At BPA's public meeting on the DEIS for the Coyote Springs Cogeneration Project, I mentioned that the project had changed since the DEIS had gone to print. As a result, there are differences between the DEIS and the ODOE Proposed Order which was issued on January 10, 1994. You asked if I would identify the more important changes to assist you in preparing the FEIS.

018-1 On January 5, 1994 PGE amended its application to EFSC for a site certificate. The primary change was to include the possibility of using a "zero discharge system" for managing wastewater rather than using the Port of Morrow's existing industrial wastewater disposal system. That change has implications for cooling tower drift as well as the quantity and quality of solid waste that would need to be disposed.

In addition, in January 1994 PGE submitted to ODOE: a report on further site-specific seismic hazard evaluation, an ecological monitoring program (revised), additional information to supplement Exhibit U of its application, and clarification on the availability and sources of water for the project.

I assume that PGE will also offer comments on the DEIS which will assist you in addressing the recent changes to the proposed project. You should be able to obtain each of the documents mentioned above from PGE.

My specific comments follow. If you have any questions or need another copy of the ODOE Proposed Order, please give me a call at 503-378-6916.

Sincerely,

Tom Meehan

Tom Meehan
Energy Facilities Analyst
Facility Regulation Division

c. Tom Walt, PGE

Barbara Roberts
Governor

625 Marion Street NE
Salem, OR 97310
(503) 378-4040
FAX (503) 373-7806
Toll-Free 1-800-221-8035

March 30, 1994
Page 2

p. S-1, Summary. The first sentence in the second paragraph is unclear. It appears that some words were omitted. 018-2

p. 3-1, section 3.1. The second to the last sentence of the first paragraph is unclear. It would be helpful if the EIS would 018-3 explain what BPA would do if there is not enough transmission capacity for the second unit. How would BPA recover the costs associated with a complex upgrade if one were needed?

p. 3-9 and 10. The discussions on water, well water use and wastewater are no longer accurate. The most recent information I 018-4 have from PGE (letter dated January 3, 1994) shows that water for the project would come from several existing wells (both shallow alluvial and deep aquifer) operated by the Port, and from the City of Boardman. See ODOE Proposed Order, p. 14,15. Also, PGE on January 5, 1994 amended its application to EFSC to provide for a "zero discharge system" as an alternative to discharging project wastewater to the Port's current industrial wastewater disposal system. PGE did this because of the uncertainty as to whether the Port may legally dispose of the wastewater under Oregon DEQ regulations. At this time, PGE has not decided which wastewater disposal method it will use. See ODOE Proposed Order, p. 16,17,41,42,45,46.

p. 3-12, Solid Waste. If PGE should use a "zero discharge system" for wastewater disposal, it would generate an estimated 018-5 ten tons per day of dewatered sludge. See PGE Amendment and ODOE Proposed Order, p. 41,42,45,46.

p. 4-5 and 6, Seismic Hazard. PGE has done more site-specific seismic hazard analysis at the request of DOGAMI. The report was 018-6 done by Ebasco, dated January 1994, and transmitted to ODOE by letter dated January 20, 1994.

p. 4-13, Fish and Wildlife. In 1993, the Oregon Fish and Wildlife Commission listed the Snake River spring/summer Chinook 018-7 salmon and Snake River fall Chinook salmon as threatened as provided under Oregon law.

p. 4-22 to 25 and 5-38 to 40. We appreciate BPA's attention to, and discussion of EMF in the DEIS. Although the EFSC has not 018-8 adopted any rules relating to possible EMF health effects, ODOE and EFSC consider this an important issue and are monitoring it.

p. 5-5, Seismic Risk. The ODOE Proposed Order, p. 22, requires that the applicant design and construct the facility to address 018-9

March 30, 1994
Page 3

any estimate of peak ground acceleration which exceeds that covered by seismic zone 2B.

018-10 p. 5-7, Wildlife. The conclusion that the cooling tower drift would not have adverse impact on Messner Pond was based on a specific drift rate and a specific concentration of total dissolved solids (TDS) in the cooling tower water. If PGE uses a zero discharge system, the concentration of dissolved solids in the cooling tower water may be much higher than this level. Thus, the conclusion that there would be no adverse impact to Messner Pond may no longer be true. ODOE has asked PGE to redo its cooling tower drift impact analysis assuming a zero discharge system. We have not seen the results and have not determined that there would be no adverse impact to Messner Pond. Therefore, our Proposed Order requires that PGE maintain the total dissolved solids (TDS) concentration in the cooling tower water, and the drift rate from the tower, at the levels which were used as the basis of our finding of no adverse impact. We will reconsider these conditions, after we have reviewed PGE's revised cooling tower drift impact analysis. See Proposed Order, p. 29 to 32.

018-11 p. 5-7, Mitigation. PGE has submitted an "Ecological Monitoring Program" by letter dated January 5, 1994 to ODOE.

018-12 p. 5-8. Federally Listed Animals. We were unaware that PGE had done a Biological Assessment on federally listed threatened and endangered species. We appreciate BPA including it in the DEIS. I would appreciate you keeping me advised on USFWS and NMFS responses to the assessment.

018-13 p. 5-9, Water Impacts. It would be helpful if the EIS would explain who receives and reviews PGE's stormwater pollution plan.

018-14 p. 5-9, Surface Water. The third paragraph is no longer correct. See comment about zero discharge system for p. 3-9,10.

018-15 p. 5-10, Groundwater. This discussion is no longer accurate. Water for the project may be coming from more than three wells. Also, Waterwatch has protested the Oregon Water Resources Department (WRD) approval of the proposed new deep basalt aquifer well discussed in paragraph three. Thus, there is some uncertainty as to the ability to use water from this well. I asked PGE, the Port and WRD to make certain that there would be enough water for the project without relying on water from this new well. They have indicated that between the Port's already permitted wells and the agreement with the City of Boardman to

March 30, 1994
Page 4

provide the Port water which could be used for the project, there would be enough water. See Proposed Order, p. 14,15; PGE letter to ODOE dated January 3, 1994.

p. 5-16, second paragraph. The values for drift rate and TDS in the first sentence may no longer be correct, if a zero discharge system is used. See comment for cooling tower, p. 5-7. 018-16

p. 5-20, Vegetation/Wetland Impacts. See comment for cooling tower, p. 5-7. 018-17

p. 5-25, Solid Waste Disposal. See comment for p. 3-12. 018-18

p. 5-34, Wildlife. Construction of the transmission line will require removing vegetation which exceeds 12 feet in height and all Russian olive trees (which occur along the southern edge of the Messner Pond area) from the corridor. This would represent a small loss of habitat for wildlife. However, PGE's proposal to plant and maintain trees between Messner Pond and the project site would make up for this loss. 018-19

p. 5-41, Noise Impacts. the Oregon Department of Environmental Quality has adopted noise regulations in OAR Chapter 340, Division 35. It is my understanding that noise levels from the transmission line will be consistent with the applicable provisions of those regulations. If this is correct, it would be useful for the EIS to say this. If this is not the case, I would appreciate you advising me. 018-20

p. 5-48 and 49. Transmission Capacity. The discussion of the impact of the three proposed power plants on BPA's transmission system, and what might be done to address the issue, was very useful. 018-21

facreg\fac\tes\coyotesp\bpadies.w51

DEPARTMENT OF THE ARMY
PORTLAND DISTRICT, CORPS OF ENGINEERS
P. O. BOX 2946
PORTLAND, OREGON 97208-2946

RECEIVED BY BPA
PUBLIC INVOLVEMENT
LOG #: Coyote-19
RECEIPT DATE: 4/7/94
AREA: DISTRICT

Reply to
Attention of:

April 5, 1994

Planning and Engineering Division

SUBJECT: Permit Application ID No: 94-235

Bonneville Power Administration
Attn: Ken Barnhart
P.O. Box 3621
Portland, Oregon 97208

Dear Mr. Barnhart:

I have completed my review of portions of the Draft Environmental Impact Statement dated January 1994 for the Coyote Springs Cogeneration Project in Morrow County, Oregon. Specifically, I have reviewed Sections 4.1.1, 4.1.2, 6.16, 6.18, 6.18.1 and Maps 4 and 5 of the document.

My numbered comments of the above referenced Sections and Maps follow:

019-1 1. Section 4.1.1 - The second sentence of the segment discussing Existing Land Use needs to be revised. The quarry still exists (or at least in part) according to your consultant, Chris Thoms.

019-2 2. Section 4.1.2 - In the segment that discusses Surface Water under the heading Water Resources (page 4-7) the discussion of gravel mining ponds is not consistent with the comments in Section 4.1.1.

019-3 3. Section 6.16 - The segment titled Section 404 should be rewritten thus: This section of the Clean Water Act is regulated by the U.S. Army Corps of Engineers. Fill and removal is regulated by the Oregon Division of State Lands under the Oregon Removal Fill Law. Generally, waterfilled depressions created in dry land incidental to construction activities and pits excavated in dry land for the purpose of obtaining fill or sand, are not considered waters of the U.S. unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States (preamble to 33 CFR 320-330/page 41217 under Section 328.3: Definitions).

Discharging fill into the gravel mining pond that is currently being mined, generally is not a regulated activity under Section 404 of the Clean Water Act.

Under the segment titled Oregon Removal Fill Law delete With the Corps, (first sentence) and replace with The.

4. Section 6.18 - No changes.

5. Section 6.18.1 - Add to the last of the first sentence, in the absence of Congressional consent and approval of the plans by the Chief of Engineers and Secretary of the Army. 019-4

6. Map 4 - The National Wetland Inventory Map should be reviewed for the project area. A copy of that map is attached as an enclosure and indicates more wetland associated with Messner Pond than shown on Map 4. 019-5

7. Map 5 - No Concerns.

This concludes our comments and review of the referenced document. If you have questions, please contact me at the above address or telephone (503) 326-6997.

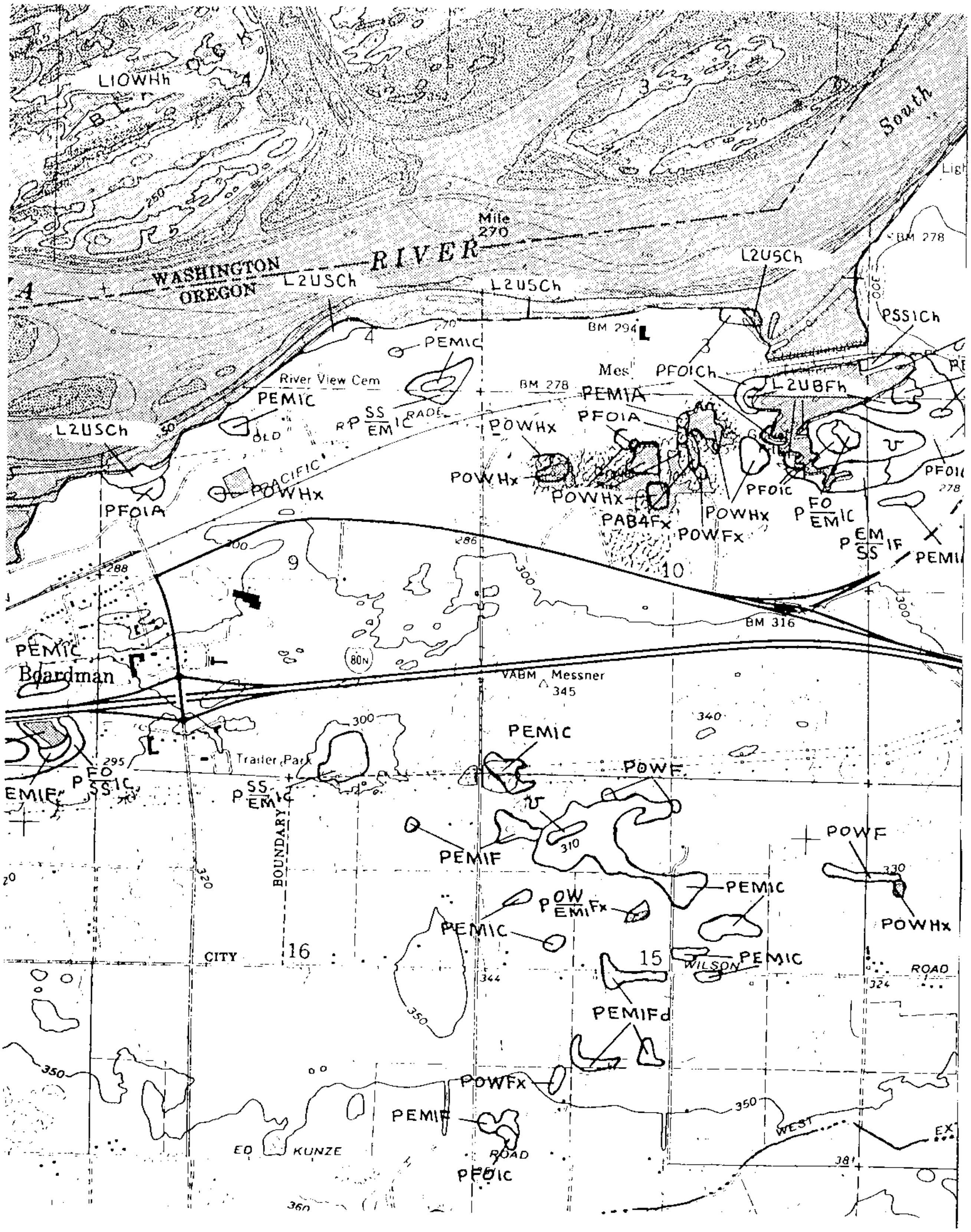
Sincerely,

[illegible]
Project Manager
Regulatory and Environmental
Resource Branch

Enclosure

Copy Furnished:

EPA, Portland
EPA, Seattle (Bregar)
BPA, Thoms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OREGON
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PFO1Ch
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BM 294

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

ECEIVED BY BPA
PUBLIC INVOLVEMENT
LOG #: COYOTE-02-0020
RECEIPT DATE:

AREA: DISTRICT

REPLY TO
ATTN OF: WD-126

APR 04 1994

Ken Barnhart
EFBG
Bonneville Power Administration
P.O. Box 12999
Portland, Oregon 97208

Dear Mr. Barnhart:

In accordance with our responsibilities under the National Environmental Policy Act and Section 309 of the Clean Air Act, the Environmental Protection Agency (EPA) has reviewed the **Coyote Springs Cogeneration Project Draft Environmental Impact Statement** (draft EIS). The draft EIS analyzes a No Action, and one action alternative to build a combustion-turbine electrical generation plant near Boardman, Oregon.

Based on our review, we have rated the draft EIS EC-2 (Environmental Concerns -- Insufficient Information). A copy of our rating system is enclosed. EPA is concerned that there is only one action alternative, and no site-specific options with which to chose a least environmentally damaging alternative. The National Environmental Policy Act stipulates that a thorough alternatives analysis is an integral part of the EIS. We have also enclosed comments on wetlands, water quality and project monitoring. 020-1

As Ken Barnhart and John Bregar discussed during their March 29 phone conversation, Martha Sabol of our groundwater section has not yet completed her review of the groundwater portion of the EIS. Her comments will be sent to you as soon as possible.

This rating and a summary of our comments will be published in the *Federal Register*. Thank you for the opportunity to review this draft EIS. Please contact John Bregar at (206) 553-1984 if you have any questions about our comments.

Sincerely,

J Cabreza

Joan Cabreza, Chief
Environmental Review Section

Enclosure

Printed on Recycled Paper

U.S. ENVIRONMENTAL PROTECTION AGENCY
COMMENTS ON
THE COYOTE SPRINGS COGENERATION PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT

Alternatives

The draft EIS provides a clear description of the proposed Coyote Springs cogeneration project. EPA is concerned, however, with the lack of alternatives for power generation.

Section 1500.2(e) of NEPA states, "Use the NEPA process to identify and assess the reasonable alternatives to proposed actions that *will* avoid or *minimize* adverse effects of these actions upon the quality of the human environment." It follows, according to section 1502.14 of the National Environmental Policy Act, that agencies shall:

> (a) Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.
>
> (b) Devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits.
>
> (c) Include reasonable alternatives not within the jurisdiction of the lead agency.
>
> 020-2 (d) Include the alternative of no action.
>
> (e) Identify the agency's preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference.
>
> (f) Include appropriate mitigation measures not already included in the proposed action or alternatives.

The Coyote Springs draft EIS does not identify any alternatives for the proposed action. These alternatives are absolutely necessary in order to evaluate the comparative merits of other possible options.

Other alternatives should be presented in the final EIS or a supplemental draft EIS so the public can identify the least environmentally damaging option.

EPA recognizes that PGE's 1992 Integrated Resource Plan (IRP) identifies a wide range of new energy sources that will be needed in the future. However, this does not preclude a thorough alternatives analysis.

Since the IRP has already indicated a need for power that has "operating, cost and environmental characteristics of gas-fired, combined-cycle CTs (page 2-2)," the alternatives analysis should include different plant locations, transmission alignments, water well locations, access, and other site-specific options.

Wetlands

Page 4-2 states, "The current land use of the proposed power plant site is vacant. The parcel was once operated as a gravel quarry, but the quarry has since been filled..." This statement seems to imply that the gravel mining operation has ceased. However, later, on page 4-7 it states, "Because the (gravel mining) pond is created by an active mining operation, it is not regulated by either the Corps or the Oregon DSL." These statements do not provide a clear impression of the current land use for the gravel mining pond. The final EIS should address this topic, as there potential 404 permit implications if the pond is no longer used for gravel mining. 020-3

BPA should contact the Army Corps of engineers on this issue to clarify the situation. Before the final EIS is issued, the jurisdiction of the mining pond should be explained in detail. For further information, please contact Jim Goodzward at the Corps in Portland at 503-326-5500.

Water Quality

It is the goal of the Clean Water Act to restore and maintain the chemical, physical and biological integrity of the nation's waters. The final EIS should clearly demonstrate that project implementation will comply with state Water Quality Standards. State Water Quality Standards establish designated uses for a water body (or water body segment), support the uses with water quality criteria, and, where necessary, protect that water quality with an Antidegradation Policy.

Baseline water quality data at the project level are key in the evaluation of projected impacts. Therefore, data from relevant sampling efforts should be included as part of the "affected environment" discussion. The discussion should identify the amount and quality of available resource information, including data gaps and needs. When baseline water quality data are not available, assessments based on extrapolation from comparable watersheds or professional opinion should be carefully explained. 020-4

The final EIS should provide a quantitative basis to judge whether physical and chemical parameters, such as temperature, turbidity, and sediment accumulation, will be kept at levels that will protect and fully support designated uses and meet Water Quality Standards under each of the action alternatives. The state's identification of water bodies with impaired uses (found in the state 303(d) report), as well as the magnitude and sources of such impairment, should also be included.

In Chapter 5, on page 5-9 it states, "No direct impact to Messner Pond is expected by construction. A slight impact is expected from salt precipitation from cooling tower emissions." EPA would like to see a quantitative analysis of the salt precipitation effects on all surface water bodies in the area if there are predicted impacts.

In Chapter 4, on page 4-7 there is a brief discussion of the existing surface water in the project area. The reader is informed that there is surface water draining into Messner pond from the southeast. This section should be expanded using the above quantitative assessment. On map

4, it shows a pipeline corridor, and a power line corridor located southeast of Messner pond. There is not enough information here to determine the possible impacts to Messner pond from construction and stormwater runoff. *The stormwater pollution plan, mentioned on page 5-9, should be included in the final EIS, so the reader can at least have an idea of the measures that will be taken to avoid impacts to the pond.*

Monitoring

The final EIS should include a discussion of monitoring for each resource category determined to be significant through the scoping process, including fisheries and water quality. A well designed monitoring plan will address how well the preferred alternative resolves issues and concerns by measuring the effectiveness of the mitigation measures in controlling or minimizing adverse effects.

On page 5-7, the fish, wildlife, and vegetation monitoring plan is mentioned. EPA would like to see this plan in the final EIS, not "before construction begins." A commitment should be made to monitoring these resources.

020-5

The monitoring plan should include types of surveys, location and frequency of sampling, parameters to be monitored, indicator species, budget, procedures for using data or results in plan implementation, and availability of results to interested and affected groups.

The EIS should describe the feedback mechanisms which will use monitoring results to adjust standard operating procedures, and monitoring intensity at first detection of unexpected, adverse effects. This ensures that mitigation strategies will improve in the future and that unforeseen adverse effects are identified and minimized.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

Reply to
Attn of: WD-139

MEMORANDUM

SUBJECT: Ground Water Section Comments on Coyote Springs Cogeneration Project, Morrow County, Oregon

FROM: Martha Sabol, Hydrogeologist
Ground Water Section

TO: John Bregar
Environmental Review Section

The following are our comments on the Coyote Springs Cogeneration Project, Morrow County, Oregon Draft Environmental Impact Statement (EIS):

1) The EIS needs to address the relationship and impacts of the cogeneration project to the City of Boardman (the City) wellhead protection program currently under development. Specifically, the EIS needs to address the impacts the project will have on the wellhead delineation results. EPA provided funding to the City in 1991 to begin developing a wellhead protection program. These funds were used to delineate capture zones around the three Ranney collectors that supply water to the City. This study is described in "Final Report-Wellhead Protection Demonstration Project, Boardman, Oregon" October 1992, by CH2MHill. The EIS indicates that the City will provide water to the cogeneration project via current wells, and possibly from drilling additional wells. The impact of this water use on the delineation boundaries should be addressed in the Final EIS. 020-6

Specific items concerning the City of Boardman wellhead protection program that the Final EIS should address are:

a-Describe the impact of the project on the delineated capture zones. Do their shape and size change when the cogeneration project begins using the additional water?

b-Determine if the cogeneration project is inside any of the capture zones. If it is, describe how the project is consistent or inconsistent with the City's land use management strategies for land inside the wellhead delineated capture zones.

c-Locate the proposed new well on a location map, and conduct a preliminary capture zone delineation to determine the impact of the new well on capture zones of the current wells.

d-Describe the land use and potential sources of contamination within the delineated capture zones around the proposed new well, and determine whether ground water contamination has ever been detected within the area of the capture zones. This exercise helps analyze whether water pumped from the new well will be a potential risk to public health.

020-7 2) Describe the impacts to ponds and wetlands from increased ground water pumpage.

020-8 3) Page 4-40: A discussion concerning potentially designated wellhead protection areas should be added to Section 4.1.8 "Protected Areas:.

020-9 4) Page 6-11, Section 6.17.2: Delete this section. The critical aquifer protection program under the Safe Drinking Water Act expired in 1988. However, the Sole Source Aquifer Program is still in effect for anyone desiring to petition EPA to designate an area as sole source.

This concludes our comments. Please give me a call if you have any questions (3-1593).

APR 28 1994

EFBG

Mr. John Bregar, WD-126
Environmental Protection Agency - Region 10
1200 Sixth Avenue
Seattle, WA 98101

Dear Mr. Bregar:

As a follow up to our luncheon meeting on April 21, we plan to take the following actions in response to EPA's comments in the Draft Environmental Impact Statement (EIS) for the Coyote Springs Cogeneration Project:

1) Alternatives - Bonneville Power Administration (BPA) will describe several transmission line and gas pipeline routing alternatives that were considered. We also will describe the environmental considerations that were factors in formulating Portland General Electric's Integrated Resource Plan.

However, as we discussed in our meeting, with regard to the project as a whole, National Environmental Policy Act (NEPA) and its defining regulations oblige Federal agencies to discuss only alternatives that are reasonable. 40 C.F.R. §§ 1502.14(a) and (c), 1508.25(b)(2); see also, Forty Most Asked Questions Concerning CEQ's NEPA Regulations, 46 Fed. Reg. 18.026, 18,027 (March 23, 1981). Recognizing that "reasonable" is not self-defining, now Supreme Court Justice Clarence Thomas, in Citizens Against Burlington, Inc. v. Busey, 938 F. 2d 190 (D.C. Cir. 1991), cert. denied, 112 S.Ct. 616 (1991), provided some clarity, as follows:

> NEPA plainly refers to alternatives to the "major Federal actions significantly affecting the quality of the human environment," and not to alternatives to the applicant's proposal. NEPA § 102(2)(C), 42 U.S.C. § 4332(2)(C) [emphasis in original]. An agency cannot redefine the goals of the proposal that arouses the call for action; it must evaluate alternative ways of achieving its goals [emphasis in original] . . . Congress did not expect agencies to determine for the applicant what the goals of the applicant's proposal should be.

Id. at 199.

The approach in the Draft EIS is also consistent with Section 10 of BPA's enabling legislation, the Pacific Northwest Electric Power Planning and Conservation Act 16 U.S.C. §§ 839 et seq., as follows:

> Nothing in this Act shall be construed to affect or modify any right of any State or political subdivision thereof or electric utility to . . . make energy facility siting decisions, including, but not limited to, determining the need for a particular facility, evaluating alternative sites, and considering alternative methods of meeting the determined need.

16 U.S.C. § 839g.

Accordingly, with regard to the Coyote Springs Cogeneration Project as a whole, BPA believes that it is appropriate to limit our examination of overall alternatives to the proposed action and the no action alternative.

2) Wetlands - As recommended, BPA has contacted the U.S. Army Corps of Engineers. The land use description of the site was in error. The quarry has been an ongoing operation for fifteen years and thus a 404 permit will not be required. We will report consultations with the Corps in the Comment/Responses Section of the Final EIS, and within Section 5 - Environmental Consequences and Section 6 - Environmental Consultation, Review, and Permit Requirements.

3) Water Quality - As we also discussed, the Draft EIS was written to non-technical readers. In the case of water quality, a significant amount of work was done that was not described in the Draft EIS. I have enclosed several documents that will be appended to the Final EIS to comply with your comments:

A.) Beak Consultants, Inc. April 1994. Potential Cooling Tower Drift Effects on the Water Quality and Vegetation at Messner Pond Near the Proposed Coyote Springs Cogeneration Facility.

B.) Portland General Electric Company. April 7, 1994. Draft EIS Comment Letter - Commitment to use a zero waste water discharge system.

C.) Portland General Electric Company. 1993. Applications to Morrow County for National Pollution Discharge Elimination System (NPDES) permits for the Coyote Springs Cogeneration Plant and transmission line. Coyote Springs Erosion and Sedimentation Control Plans for the Coyote Springs Cogeneration Plant and transmission line.

D.) Morrow County Planning Department. May 27, 1993. Letter issuing requested NPDES permits for the Coyote Springs Cogeneration Plant and transmission line.

E.) Morrow County Planning Department. December 6, 1993. Letter acknowledging receipt and acceptance of the Coyote Springs Erosion and Sedimentation Control Plan.

4) Monitoring - Several environmental impact monitoring plans have been formulated and committed to by Portland General Electric. I have enclosed several documents that will be appended to the Final EIS and which respond to your comments on this topic:

A.) Portland General Electric Company. December 1993. Ecological Monitoring Program for the Coyote Springs Power Plant.

B.) Morrow County Planning Department. May 27, 1993. NPDES permits for the Coyote Springs Cogeneration Plant - Schedule B Minimum Monitoring and Reporting Requirements.

C.) Oregon Department of Environmental Quality. April 1994. Air Contaminant Discharge Permit No. 25-0031. Application No. 13212. Morrow County, OR. Monitoring and reporting requirements for air discharges are described in the permit.

D.) Oregon Department of Energy. January 10, 1994. Proposed Order - In the matter of the Application for Site Certificate of Portland General Electric Company for the Coyote Springs Cogeneration Project (proposed reporting and monitoring requirements related to environmental standards and requirements).

5) Ground Water - We have obtained a copy of the "Final Report - Wellhead Protection Demonstration Project, Boardman, Oregon," and have arranged to meet with CH2M Hill and the City of Boardman in order to answer the questions raised by Martha Sabol. The results of these consultations will be summarized in the groundwater sections of the Final EIS. We will describe anticipated effects from increased groundwater pumping on ponds and wetlands in the Final EIS.

We trust the actions described above explain BPA's position and adequately address EPA's comments and further, when accomplished in the Final EIS, will remove EPA's concerns. If you have specific questions related to any of these topics please contac. me at (503) 230-3667.

Sincerely,

/S/

Kenneth A. Barnhart
Project Environmental Coordinator

MAY 31 '94 13:13 VECA-503-5678142

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

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To JACK MAYCOW | From PALMER
Co. PGE | Co. BOARDMAN
Phone # | Fax #

Reply to
Attn of: WD-139

MAY 2 5 1994

MEMORANDUM

SUBJECT: City of Boardman response to our comments on Coyote Springs Co-Generation

FROM: Martha Sabol, Senior Hydrogeologist
Ground Water Section MS

TO: John Bregar
Environmental Review Section

I received a letter from Barry Beyeler, Public Works Director for the City of Boardman, Oregon (the City), which addresses our concerns with the Coyote Springs Co-generation Draft Environmental Impact Statement. Our concerns related to the impact of the facility on the Boardman wellfield. Barry describes additional work that was conducted by CH2MHill as a result of our comments, and the close working relationship that the City has with Portland General Electric.

The City is addressing our concerns, and ground water protection measures are being instituted that will protect the wellfield now, and in the future. I am enclosing a copy of Barry's letter for your use. I suggest that the Final EIS incorporate Barry's descriptions of the wellhead protection work that has been conducted, and a description of how the wellfield will be protected through the proposed wellhead protection ordinance.

Please give me a call if you have any questions (x-1593).

Attachments (documents forwarded w/ Boardman Release)

cc: Barry Beyeler, Public Works Director, City of Boardman

Printed on Recycled Paper

City of Boardman
Town Square
P.O. Box 229
Boardman, OR 97818
Telephone (503) 481-9252

May 20, 1994

Ms. Martha Sabol
US Environmental Protection Agency
Region 10, Office of Ground Water
1200 Sixth Ave., WD-139
Seattle, Washington 98101

Dear Ms. Sabol,

Pursuant to your memo to John Bregar of the Environmental Review Section concerning the Coyote Springs Co-generation facility currently going through the site certification process, The City of Boardman has met with officials from Portland General Electric (PGE). Examined were potential impacts to the area, and specifically to the Drinking Water System and Wellhead Protection Area (WHPA).

The City is satisfied with the efforts of PGE to determine and mitigate any of the identified impacts. PGE has been very cooperative in their efforts to work with the City in assessing the potential impacts and provide complete protection to the WHPA.

In response to the question regarding potential impacts created by PGE's additional use of water in the area, PGE has consulted with CH2M HILL of Portland. CH2M HILL (Jeff Barry, project supervisor) has performed a review of the WHPA identified in the Demonstration Project Report of October 1992. CH2M HILL performed this analysis by using 2 dimensional numerical modeling with the additional pumping projections from Port of Morrow wells completed in the alluvial aquifer that the City Ranney Collector is completed in. These "remodeling" efforts showed a change in the delineated areas which actually decreased the size of the zone of capture for the Boardman Ranney Collector Field. Attachment 1 displays a view of the actual change in the size of the WHPA. When the pumping from the Port of Morrow sources, within the alluvial aquifer, are at capacity, the delineation shift has the effect of the co-generation facility site "moving" outside of the redefined WHPA (as compared to being between the 10 year time-of-travel [TOT] and the 20 year TOT without those alluvial aquifer wells in the proposed production levels). The pumping capacities of the Port of Morrow wells in the alluvial aquifer were not entered into the original Demonstration Project delineations to assure a conservative delineated area. This decision was based on the City not having control of the ultimate pumping rates for these wells.

Although the co-generation facility is outside of the redefined WHPA TOT boundaries, when Port of Morrow alluvial aquifer wells are producing at capacity, and inside of the defined WHPA when those wells are idle is interesting; however, for several reasons, the City is not considering changing the currently defined WHPA TOT lines an option, even based on the refinement of the numerical model. The reasoning behind this decision is the same as identified in the original delineation in that the City does not own or operate the wells in the alluvial aquifer and therefore has no direct control upon the ultimate well/aquifer pumping rates. Thus when these wells become idle the WHPA TOT definitions are projected to revert back to the original Demonstration Project delineations. The City is aware that there will be some period of time after the wells become idle to when the aquifer equilibrium returns to the originally defined TOT lines; however, given the conditions of this aquifer the City is convinced that this time should be minimal.

The City is drafting an Ordinance specifically for the Wellhead Protection Area, and has been reviewing current ordinances from other localities around the country to determine what will work best for local conditions and development patterns. A draft copy of developments to date is included (Attachment 2) for your review. Until this Ordinance is completed and adopted the City will review any potential development individually and work with the developer to assure that the development meets the purpose of protecting the drinking water supply. The City has found that this is far less than desirable (without the framework provided by an Ordinance) so the City is proceeding with the development of a WHPA ordinance as quickly as possible. The original intent of the City was to incorporate WHPA into a current review of the zoning and development regulations; however, due to the impending increase in development activity the WHPA ordinance is being placed into a higher priority in an effort to provide that necessary framework in a shorter period.

The City has reviewed the development plans of the Coyote Springs Facility and are satisfied with the plans that have been developed. The City and PGE have agreed to work together in meeting all of the goals of the City's Wellhead Protection Program. PGE has been very responsive to the City's concerns and have been acting as responsible corporate neighbors. Mr. Len Gunderson of PGE has been working to keep the City informed on progress of the project and to answer any questions regarding changes that are noted. PGE has supplied the City with information, complete with Material Safety Data Sheet (MSDS) information, on the substances proposed to be used at the facility. This will allow the City to determine potential impacts and to develop strategies that can be implemented jointly by the City and PGE to ameliorate those potential impacts.

In closing, the City of Boardman is confident that the working relationship that has been developed on this project with PGE will serve to protect our wellhead area. Further, this may serve as a model for proposed future industrial development. In addition the City, recommending authorization for the construction/operation of the plant, looks forward to a working relationship with PGE for the protection of the City drinking water supply through Wellhead Protection efforts.

Should you have any questions or comments please feel welcome to contact me and we can discuss them in greater detail.

Sincerely,

Barry C. Beyeler
Public Works Director

cc: Jack Mayson & Len Gunderson, PGE
Jeff Barry, CH2M HILL
Gary Neal, Port of Morrow

Portland General Electric Company

RECEIVED BY BPA
PUBLIC INVOLVEMENT
LOG #: COYOTE-02-021
RECEIPT DATE:
4/19/94

April 7, 1994
TDW-085-94CS

Mr. Ken Barnhart - EFBG
BPA
P.O. Box 3621
Portland, Oregon 97208

Dear Mr. Barnhart:

RE: BPA Draft EIS

Thank you for the opportunity to comment on the January 1994 Draft Environmental Impact Statement (DEIS) for Coyote Springs.

021-1 After the DEIS was prepared PGE made two significant decisions relating to the Coyote Springs project. First, the decision has been made to change the plant design so that the NO_x emissions from the project are 4.5 ppm. (NO_x emissions are discussed on page 3-11 of the DEIS.) This reduces the NO_x emissions from the project by one half. The second significant change is that PGE has committed to utilize a zero discharge system if a suitable plan for mixing the Coyote Springs wastewater with the Port of Morrow's wastewater is not approved by Oregon DEQ. In the event that a zero discharge system was utilized at Coyote Springs the portions of the DEIS relating to water usage and wastewater discharges would not be up-to-date.

In addition to the two significant items I would also like to note some minor items in the DEIS that could be changed.

021-2 1. Page S-7 of the DEIS notes that a "... bank swallow colony on the plant site would be impacted by the proposed plant". The Site Certificate proposed by EFSC requires that PGE construct a fence and signs to protect the bank swallow nesting colony from disturbance during construction. The colony is outside the area affected by plant operation.

021-3 2. Page S-10 of the DEIS notes that a shortage of temporary housing facilities in area could occur if the two Hermiston cogeneration projects and the Coyote Springs project peak construction periods occur concurrently. While this is true, the construction schedules for the three projects are not coincident so the impact on temporary housing is not anticipated to be significant.

021-4 3. Page 3-2 of the DEIS discusses the PGT line being built to Coyote Springs. The inference is that the lateral line to Coyote

Springs will be sized to transport 41 billion BTU/day. The contract with PGT is for 41 billion BTU/day (enough gas for one unit at Coyote Springs). The pipeline is sized to carry about 100 billion BTU/day (enough gas for both units at Coyote Springs). 021-4

4. There are several references in the DEIS about Coyote Springs being outside the City of Boardman. Please be advised that the Port of Morrow is in active discussions with the City of Boardman about annexing the Coyote Springs site into the City. 021-5

Sincerely,

T. D. Walt
General Manager
Technical Functions

c: Dr. T. E. Meehan, ODOE

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11. Glossary/Acronyms

The following is a list of the technical terms and acronyms used in this document with definitions for each.

Access roads Roads that are necessary to first construct and then to maintain a transmission line. Access roads are initially built where no roads conveniently exist. Where county roads or other access is already established, access roads are constructed as spurs directly to the structure sites. Access roads are usually maintained to provide access to tower sites, accept where they pass through cultivated land.

Airshed An air supply of a given geographical area, usually defined by topographic barriers or atmospheric conditions that confine air emissions.

Alluvial Pertaining to sediments deposited by flowing water.

Ambient air Air surrounding a particular spot, such as a power plant.

Anhydrous Being without water, especially water of crystallization.

Aquifer A geologic formation or structure that contains and transmits water in sufficient quantity to supply the needs for water development. Aquifers are usually saturated sands, gravel, or fractured rock.

Angle point Where a transmission line must change direction, it forms a corner, or angle. This is an angle point. Special reinforcement is needed to counter the stress on the structure.

Attainment area A geographic area where the concentration of specific air pollutants does not exceed Federal ambient air quality standards.

Average megawatt (aMW) The number of megawatts that could be produced by a power plant multiplied by the percent of time the power plant would normally be in operation over a specific period of time, usually one year.

BACT	Best available control technologies. An emission limitation based on the maximum degree of reduction of each pollutant subject to regu lation and emitted from, or which results from, any major emitting facility.
Best management practices	A practice or combination of practices that are the most effective and practical means of preventing or reducing the amount of pollution generated by nonpoint sources to a level compatible with air or water quality goals.
Blowdown	Removal of liquids or solids from a process vessel or storage vessel using pressure.
B. P.	Before the present.
BPA	Bonneville Power Administration.
British Thermal Unit (BTU)	A quantity of heat required to raise the temperature of .45 Kg (1 pound) of water one degree Fahrenheit.
Bundle	A group of two, three or four conductors assembled together to transmit high voltage electric power, usually 500-kV.
Bus	A set of two or more electrical conductors that serve as common connections between load circuits and each of the phases (in alternating current systems) of the source of electric power.
Capacity	A measure of the ability of a transmission line to carry electricity.
Capital cost	The total investment needed to complete a project and bring it to an operable status.
Centimeter (cm)	A unit of measurement (in the metric system) equivalent to 0.3937 inches.
CH_4	Chemical formula for methane gas.
Circuit breakers	An electromagnetic device that opens a circuit automatically when the current exceeds a predetermined value.

Class I Area	Area designated for the most stringent degree of protection from future degradation of air quality.
Class II Area	Any area designated for a moderate degree of protection from future air quality degradation. Moderate increases in new pollution may be permitted in a Class II area.
Cogeneration	The technology of producing electrical energy together with useful thermal or mechanical energy for industrial, or commercial purposes, through the sequential use of an energy source.
Cold lime water	A water-softening process in which water is treated with hydrated lime (sometimes in combination with soda ash), which reacts with dissolved calcium and magnesium compounds to form precipitates that can be removed as sludge.
Combined cycle	The use of waste heat from a gas turbine topping cycle for the generation of electricity in a steam turbine generator system, thereby increasing the efficiency of heat use.
Combustion turbine	An integral part of cogeneration facilities operating on fuels that are capable of converting heat energy into electrical energy.
Conductor	The cable strung between transmission towers around which electric current flows at the speed of light.
Cooperating Agency	Any Federal agency, other than a lead agency, that has jurisdiction by law or special expertise for involvement in a proposal (or a reasonable alternative) for legislation or other major Federal action significantly affecting the quality of the human environment.
CO	The chemical formula for Carbon monoxide. Carbon monoxide is a colorless, odorless and poisonous gas formed by incomplete combustion of carbon or a carbonaceous material, such as gasoline and natural gas.
CO_2	The chemical formula for carbon dioxide. Carbon dioxide is a colorless, odorless, incombustible gas formed during respiration, combustion and organic decomposition, and commonly used in food refrigeration, carbonated beverages, inert atmospheres, fire extinguishers and other aerosols.

Criteria pollutant	An air pollution substance for which the Environmental Protection Agency has established ambient air quality standards.
CT	Combustion turbine.
Cultural resources	Nonrenewable evidence of human occupation or activity as seen in any district, site, building, structure, artifact, ruin, object, work of art, architecture, or natural feature that was important in human history at the national, state, or local level.
Cumulative impact	The impact on the environment that results from an action when added to other past, present, and reasonable foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over time.
dBA	The first two letters (dB) are an abbreviation for the term "decibel" the unit in which sound is most commonly measured. The last letter (A) is an abbreviation for the scale (A scale) on which the sound measurements were made. A decibel is a unit for expressing relative difference in power, usually between acoustic signals, equal to 10 times the common logarithm of the ratio of two levels.
d.b.a.	Abbreviation for "doing business as."
Depository libraries	Selected libraries where copies of the reference materials such as the environmental documents associated with this proposed project are kept for review and comment by the public. A list of the depository libraries related to the Coyote Springs Cogeneration Project are contained in Section 8 of this draft EIS.
DEIS	Draft Environmental Impact Statement
DEQ	Department of Environmental Quality (Oregon).
Disconnect switches	A power system switch used to open a circuit in which a negligible amount of current, or no current, is flowing. Disconnect switches are manually or motor operated and are not used to interrupt a circuit under load.
Drift	Portion of the moisture emitted that recondenses on a surface.

Double-circuit Two sets of lines (circuits) on a single tower (a single circuit consists of three conductors).

DSL Division of State Lands.

Easement A grant of certain rights for use of a parcel of land, normally for a single purpose. BPA's easements normally provide for the right to enter a specific right-of-way, and to build, maintain, and repair facilities located there.

EIS Environmental Impact Statement. A document defined at 40 CFR 1508.11 and prepared in accordance with the requirements of section 102(c) of NEPA, the Council on Environmental Quality Regulations, and DOE NEPA Guidelines.

Electric and magnetic fields (EMF) The two types of fields of force that are produced by electricity i.e., those that are produced by voltage (electric fields) and those that are produced by current (magnetic fields). Electric fields are produced by the force that causes current to flow through a conductor (voltage) and are measured by kilovolts per meter (kV/m). Magnetic fields are produced by the force that causes electrons to move in a conductor (current) and are measured in milligauss (mG).

Electric field An energy field produced by voltage, measured in kilovolts per meter.

Emergent As used here, a plant that is rooted and has parts extending above a water surface.

Emissions Substances discharged into the environment as waste material, such as discharge into the air from cooling towers or discharges into the water from waste streams.

Endangered A plant or animal that is in danger of extinction throughout all or a significant portion of its range because its habitat is threatened with destruction, drastic modification, or severe curtailment, or because of overexploitation, disease, predation, or other factors; Federally endangered species are officially designated by the U. S. Fish and Wildlife Service.

Energy The ability to produce electrical power over a period of time, expressed in kilowatt-hours.

Entrainment — Drawing fish and other aquatic organisms into tubes or tunnels carrying cooling water into thermal plants or into penstocks and turbines at a hydroelectric plant; increases death rates for those organisms.

Environmental assessment — A report of possible environmental effects that would result from a proposed Federal action . An environmental assessment is used to determine if an EIS or Finding or No Significant Impact is required by the National Environmental Quality Act of 1969, as amended.

Environmental impact statement — A detailed disclosure of environmental impacts that would result from an action, written as required by the National Environmental Quality Act of 1969, as amended.

Environmentally preferred — Designates the lowest-impact alternative locations and/or design options, based on the results of an environmental analysis.

EPA — U.S. Environmental Protection Agency

FEIS — Final Environmental Impact Statement

FERC — Federal Energy Regulatory Commission. An agency in the U.S. Department of Energy that regulates interstate transfers of electrical energy, certificates for natural gas pipelines, resource development, and other energy actions.

Fiber optic cable — Special glass wire installed on a transmission line that is used for communication between one location and another.

Firm energy — The amount of electricity that can be transferred over the system in the case of one failure. Firm energy is the equal to the single contingency rating of a transmission system.

Generation — The power that is produced through some type of power plant.

Generator — A machine that converts mechanical energy into electrical energy.

Global Warming	The phenomenon of gradually increasing average temperatures in the earth's atmosphere thought to be due primarily to accumulation of carbon dioxide and other greenhouse gases in the atmosphere.
Greenhouse gas	A gas that absorbs infrared light, thus preventing heat loss to outer space. A gas that is thought to contribute to global warming.
Groundwater	The supply of fresh water under the earth's surface in an aquifer or soil.
gpm	Gallons per minute.
Habitat	The environment occupied by individuals of a particular species, population, or community.
Hazardous waste	Substances which, if released in an uncontrolled manner, can be harmful to the environment.
Hectare (ha)	An area equivalent to 10,000 square meters or 2.471 acres.
Hectometer	A unit of measurement (metric) equivalent to one million cubic meters (263,000,000 gallons).
Historic Preservation	Includes identification, evaluation, recordation, documentation, acquisition protection, management, rehabilitation, restoration, stabilization, maintenance, or reconstruction or any combination of these activities.
Human environment	Interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment.
Hydrocarbons	Chemical compounds containing hydrogen and carbon. Some hydrocarbons may become air pollutants. Some hydrocarbon air pollutants are carcinogenic, and some react with other air pollutants to form photochemical smog.
Impact	Positive or negative environmental consequences of a proposed action.
Increment	Allowable increase in pollutants over ambient conditions.

Isolates	Small isolated cultural resource sites containing prehistoric artifacts.
Kiloliter (kL)	1,000 liters.
Kilometer (km)	1,000 meters.
Kilovolt	One thousand volts.
Kilowatt (kW)	An electrical unit of power equal to 1000 watts.
Kilowatt hour (kWh)	A basic unit of electric energy equal to one kilowatt for the period of one hour.
Knot	The distance of one nautical mile - or one minute of latitude.
Lattice steel	Refers to a transmission tower constructed of multiple steel members that are connected together to make a frame.
Level 1 audit	A initial on-site visit and records search to predict previous contamination.
Liter (L)	A unit of volume equivalent to 0.2642 gallons.
L_{MAX}	A symbol that represents the maximum permitted noise level (measured in decibels).
L_{50}	A symbol that represents the maximum permitted noise level a project may create 50 percent of the time in a day.
Load	The amount of electric power delivered to a given point on a system, or the total amount of demand on the system.
Loop	To tie a substation into an existing transmission line in such a manner as to complete the circuit along that line. Running a double-circuit loop line to a substation would allow an incoming line and an outgoing line.
Magnetic field	An energy field produced by the movement of electrons in a wire (current), measured in milligauss (mG).

Megawatt (MW) One thousand kilowatts (kw) or one million watts (W).

Methane (CH_4) An odorless, colorless, flammable gas formed by the anaerobic decomposition of organic matter. Methane is the major component of natural gas, making up 90-95 percent of the volume. In addition to its use as a fuel, methane is an important source of hydrogen and is used in a wide variety of organic compounds.

Mitigation Actions to avoid, minimize, reduce, eliminate, or compensate for the impact of a proposed activity or management practice.

Meter (m) Unit of length equal to 3.28 feet.

m^3 Cubic meter. Equal to 1,000 liters or 263 gallons.

Natural gas A mixture of hydrocarbon gases that occurs with petroleum deposits, chiefly methane, together with varying quantities of ethane, butane, propane, and other gases. In addition to its use as a fuel, it is commonly used in the manufacture of organic compounds.

NAAQS National Ambient Air Quality Standards of the U.S. Environmental Protection Agency.

NEPA National Environmental Policy Act. Major Federal legislation passed by Congress in 1969 that requires that environmental impacts of major Federal actions be identified in a detailed statement of environmental impact, along with reasonable alternatives to the proposed actions. Furthermore, environmental impacts must be made known to the public and to the decisionmaker, prior to a decision being made on the project.

NESC National Electric Safety Code.

Nonattainment An area that does not meet National air quality standards.

Non-specular To reduce the reflectivity of any object (such as electrical conductors) so that it does not reflect an inordinate amount of light.

NOEL No Observed Effects Level. The dose at which adverse effects are not observed in laboratory animal exposures.

NO_x Oxides of nitrogen.

N_20	The chemical formula for nitrous oxide. Nitrous oxide is a colorless, sweet, inorganic gas commonly known as laughing gas.
NO_2	The chemical formula for nitrogen dioxide. Nitrogen dioxide is a mildly poisonous brown gas often found in exhaust fumes and smog. It is synthesized for use as a catalyst and oxidizing or nitrating agent.
NPDES	National Pollution Discharge Elimination System. Federal water qualityprogram administered by the State agency responsible for water quality.
NSPS	New Source Performance Standards
NSR/PSD	New Source Review/Prevention of Significance.
OGCA	Oregon Groundwater Critical Area
ODOE	Oregon Department of Energy
ODOT	Oregon Department of Transportation
ONHP	Oregon National Heritage Program.
Outage	The period which a facility is out of service.
O_2	The chemical formula for oxygen. Oxygen is a colorless, odorless gas constituting 21 % of the earth's atmosphere by volume. It is a necessary constituent to most combustion and combustion processes.
Palustrine	General freshwater wetlands classification associated with partially saturated areas not part of a surface water system.
Particulates	Fine solid particles which remain individually dispersed in stack emissions
PGE	Portland General Electric Company.
PGT	Pacific Gas Transmission Company.
PM 10	Particulate matter smaller than 10 microns

Polychlorinated biphenyl (PCB)	Oily substance manufactured for use primarily as a dielectric in capacitors. Banned from use after research showed that PCBs cause skin disease and liver damage, and are a suspected carcinogen.
ppm	Parts per million.
PSD	Prevention of significant deterioration
Prevailing wind direction	The wind direction most frequently observed during a given period, such as a month, a season, or a year. The prevailing wind direction is the direction from which the wind originates, usually expressed as "out of" or "from.
Record of Decision (ROD)	A document prepared in accordance with the requirements of 40 CFR 1505.2, that provides a concise public record of the agency's decision on a proposed action for which an EIS was prepared, and identifies alternatives considered before reaching the decision, the environmentally preferred alternative(s), factors balanced by the agency making the decision, and whether all practical means to avoid or minimize environmental harm have been adopted and if not, why.
Right-of Way (ROW)	An easement for a certain purpose over the land of another, such as a strip of land used for a transmission line, roadway or pipeline.
Riprap	A wall of rocks, cobbles, or boulders put together without order to protect an embankment against water erosion.
Scoping	A method to determine the range of issues requiring examination in studying the environmental effects of a proposed action. Scoping generally takes place through public consultation with interested individuals and groups, as well as with agencies with jurisdictions either over portions of the project area or resources within the project area. Scoping is mandated by the Council on Environmental Quality.
SHPO	State Historic Preservation Office

Significant Emissions Rate Annual rate of emissions for specific pollutant that identifies a “major” air pollution source in DEQ regulations

SO_2 The chemical formula for sulfur dioxide. Sulfur dioxide can be found in either a gaseous or liquid state. It is commonly used in the manufacture of sulfuric acid.

Structure Refers to the type of supports used to elevate transmission lines or substation equipment

Supercooling Cooling a substance below the temperature at which a change of state would ordinarily take place without such a change of state occurring. For example, cooling a liquid below its freezing point without freezing taking place. This creates a metastable state.

Superheating Heating a substance above the temperature at which a change of state would ordinarily take place without such a change taking place. For example, heating a liquid above its boiling point without boiling taking place.

SWPP Storm Water Pollution Prevention Plan.

Tap To tie a substation into an existing transmission line through a connection.

Tap Point The point where two transmission lines interconnect.

Therm The equivalent of 100,000 BTU’s

Threatened species Those species officially designated by the U.S. Government that are likely to become endangered within the foreseeable future throughout all or a significant portion of their range.

Tower See structure.

Transformer A device for transferring energy from one circuit to another in an alternating-current system. Its most frequent use in power systems is for changing voltage levels.

Transmission	The act or process of transporting electrical energy in bulk from a source or sources of supply to other principal parts of a system or to other utility systems
Transmission line	The structures, insulators, conductors and other equipment used to transfer electrical power from one point to another.
Trojan	Trojan Nuclear Power Plant located near Rainier, Oregon. Trojan recently ceased generating electric power.
Uniform Building Code (UBC)	A code published by the International Conference of Building Officials. Covers the fire, life and structural safety aspects of all building and related structures.
Urban Growth Boundary (UGB)	A mutually agreed upon boundary between a city and the county. It includes an area which has been set aside for future urban growth. The boundary line separates land that can be developed from rural lands.
ug/m^3	Unit of measurement commonly used to measure pollutants in air, specifically the number of micrograms per liter.
VOC	Volatile organic compounds. Compounds containing carbon that evaporate readily at normal room temperature and pressure.
USFWS	U.S. Fish and Wildlife Service.
Volt	The unit of voltage or potential difference. It is the electromotive force which, if steadily applied to a circuit having a resistance of one ohm, will produce a current of one ampere.
Watt	The electrical unit of power or rate of doing work. The rate of energy transfer equivalent to one ampere flowing under the pressure of one volt.
Wetlands	An area where the soil experiences anaerobic conditions because of the inundation of water during a portion of any given year. Indicators of a wetland include types of plants, soil characteristics and hydrology of the area.
Wheeling	Use of transmission facilities of one utility system to transmit power to another utility system or between customer facilities within a single utility system.

Work Transference of energy that occurs when a force ` is applied to a body that is moving in such a way that the force has a component in the direction of the body's motion; it is equal to the line integral of the force over the path taken by the body.

Wastewater Water that carries wastes from buildings, institutions, and industrial establishments.

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DOE/BP-2430
July 1994
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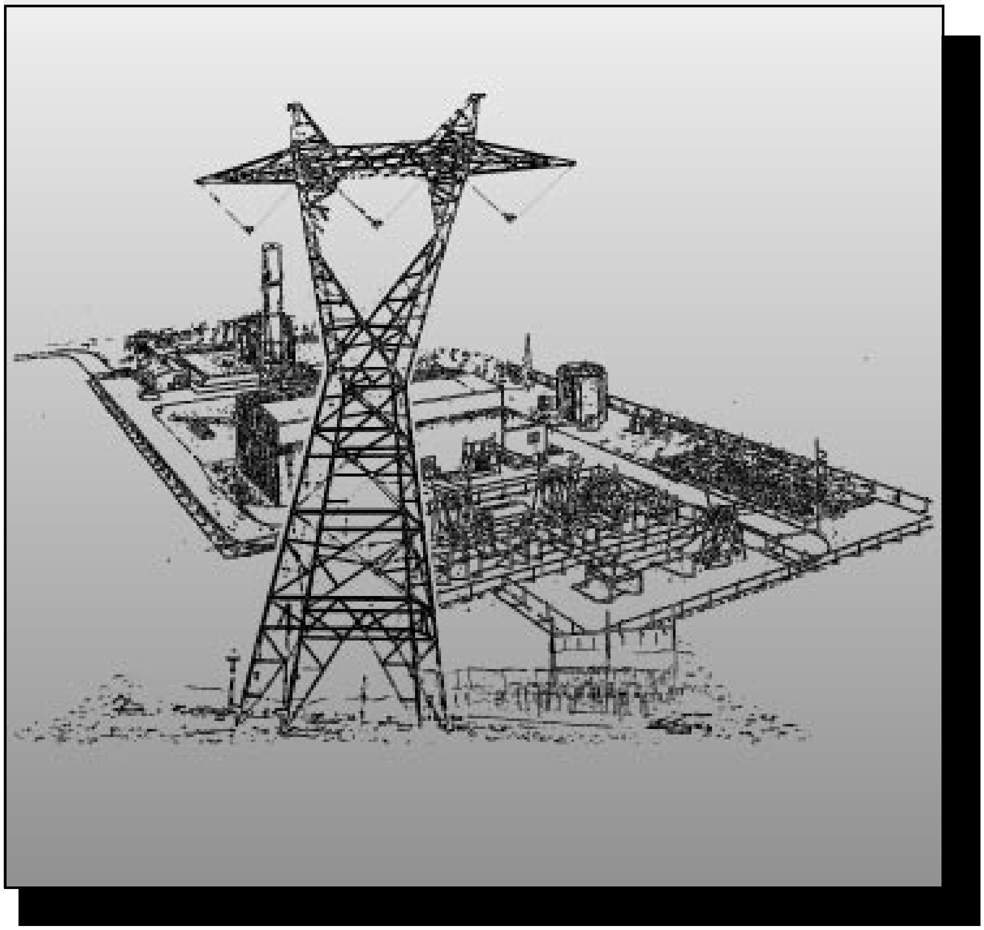
Coyote Springs Cogeneration Project

Final Environmental Impact Statement

Final Environmental Impact Statement

Coyote Springs Cogeneration Project
Morrow County, Oregon



DOE/FEIS-0201

July 1994

Bonneville
POWER ADMINISTRATION

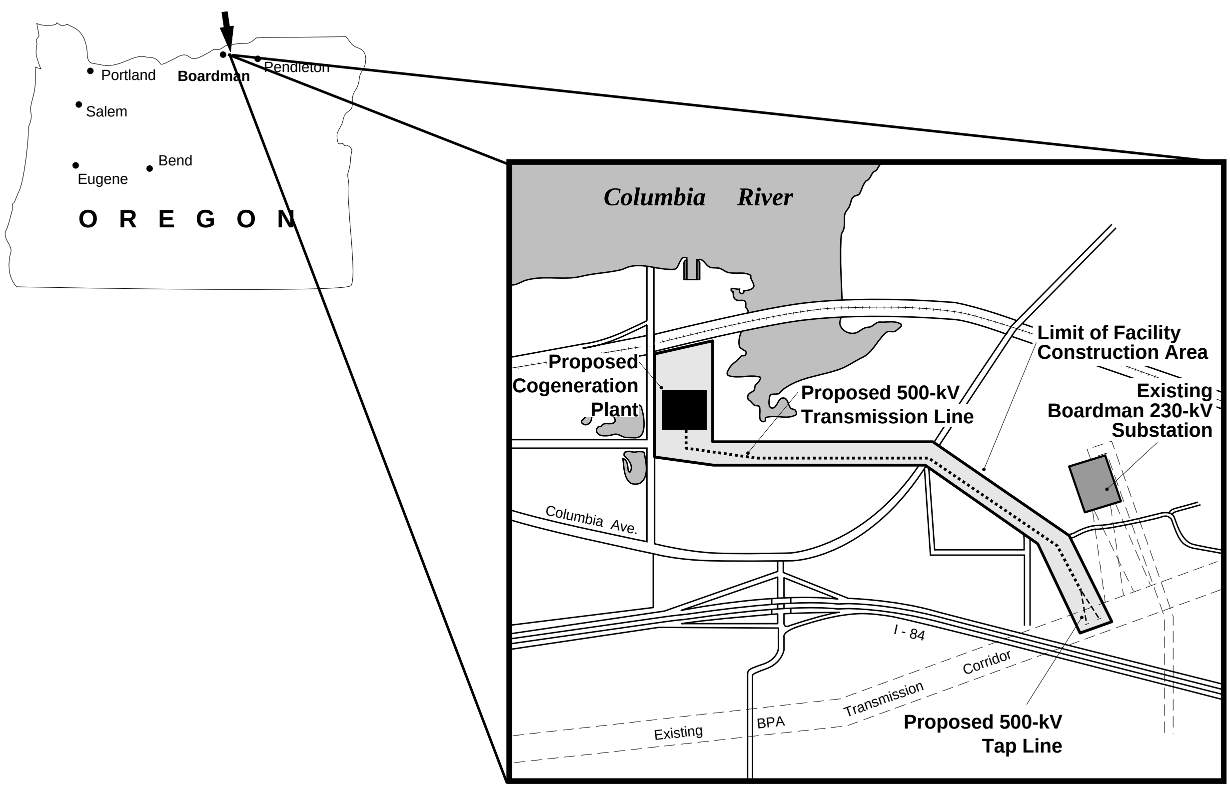
1. Introduction

Congress gave Bonneville Power Administration (BPA) the responsibility to supply electrical power to its utility, industrial, and other customers in the Pacific Northwest. Congress also directed BPA to build and operate high-voltage ***transmission lines*** to move electric power from hydroelectric dams, and ***generation*** plants fired by many types of fuel.

BPA owns and operates over 24,000 circuit kilometers (km*) (15,000 miles) of transmission lines in the Pacific Northwest. These transmission lines are used by both public and private electric utilities to transmit and market power throughout the region.

Portland General Electric (PGE), an investor-owned utility, has asked BPA to transmit power from its proposed Coyote Springs Cogeneration Plant to PGE's customers in Portland, Oregon. PGE plans to build the ***cogeneration*** plant in eastern Oregon, just east of the City of Boardman (see Figure 1-1). Cogeneration plants typically generate electricity in combination with a heat-producing process. The Coyote Springs Cogeneration Plant would use ***natural gas*** to produce electricity and steam.

Figure 1-1
Project Location



* *BPA uses metric measurements to comply with Public Law 100-418. See metric conversion chart on the inside of the back cover.*

The Coyote Springs Project would have two ***combined-cycle combustion turbines (CTs)*** with a total electrical output of 440 ***average megawatts (aMW)***. The proposed plant would be built in phases. The first combustion turbine would be built as quickly as possible. Timing for the second combustion turbine is uncertain. It is also planned that the plant would supply steam to steam customers. A 500-***kilovolt (kV)*** transmission line would be built to interconnect the plant with a nearby BPA transmission line. A natural gas pipeline spur would be built by Pacific Gas Transmission Company (PGT) from a point on their existing pipeline northeast of Ione, Oregon, to the plant site. The proposed cogeneration plant, transmission line, and natural gas pipeline are parts of a single project.

BPA has assumed the role of lead agency for the Federal EIS on the Coyote Springs Cogeneration Project. The ***Federal Energy Regulatory Commission (FERC)*** is a ***cooperating agency***. In July 1993, BPA published a Notice of Intent to prepare an ***environmental impact statement*** (EIS) to help decide whether to wheel power from PGE's proposed Coyote Springs Cogeneration Plant through BPA's ***transmission*** system. A Draft EIS (DEIS) that addressed all potential impacts of the proposed project was completed in January 1994. This Final EIS (FEIS) responds to public comments on the DEIS and provides updated information on the project. BPA expects to issue a ***Record of Decision*** concluding its decision process in 30 days following completion of the FEIS. The probable BPA decision, as described in the DEIS and restated here, will be to wheel power produced by Phase I of the Coyote Springs Cogeneration Plant to PGE customers in the Portland area.

FERC must issue a Certificate of Public Convenience and Necessity for PGT's 1995 Construction Program, which proposes two new pipelines, the Coyote Springs Extension Pipeline which is 28.8 km (18.5 miles) in length, and the Medford Extension Pipeline which is 139.2 km (86.5 miles) in length. FERC will prepare an ***environmental assessment*** on PGT's 1995 Construction Program to satisfy its NEPA requirements. Information on the environmental impact of the Coyote Springs Extension that is reported in this FEIS was abstracted from PGT's application to FERC in Docket No. CP93-618-000 and CP93-618-001.

Oregon's Energy Facility Siting Council (EFSC) is currently evaluating PGE's *Application for a Site Certificate on the Coyote Springs Cogeneration Project*. Oregon's site evaluation process, like the ***National Environmental Policy Act (NEPA)*** process, provides opportunity for public participation. BPA is coordinating its NEPA process with the state. The Oregon Department of Energy issued a "Proposed Order" approving PGE's application for a site certificate for construction and operation of the Coyote Springs Cogeneration Project on January 10, 1994. Oregon is currently conducting a Contested Case proceeding as provided for in Oregon statutes. A "Final Order" approving PGE's application for site certificate is expected to be issued by EFSC in mid-September 1994. Construction of the project is scheduled to begin in September 1994 following issuance of the site certificate.

1.1 Public Involvement

The process to find out the concerns individuals, groups and agencies may have about a proposed project is called ***scoping***. BPA's Notice of Intent included a 30-day scoping period, which ended August 6, 1993. During the scoping period, BPA accepted comments about issues to be addressed in this FEIS.

BPA also held a public scoping meeting at Riverside High School in Boardman, Oregon on July 29, 1993. The public meeting was announced in the Notice of Intent, local newspaper ads, and in a notice sent to those on the project mailing list including Federal, state, and local governments; environmental organizations; and landowners within 2 km (1.2 miles) of the site.

PGE prepared a fact sheet to help people understand key elements of the project.

Comments received during the scoping meeting and through written communication included these issues:

- Air quality impacts
- Noise impacts
- Water resources impacts
- Farmland impacts
- Water vapor impacts to transportation
- Economic development and employment impacts
- Electromagnetic field impacts to health and safety
- Visual impacts
- Consistency with local comprehensive plans

Issues identified during the scoping process were discussed in the DEIS which BPA completed and mailed to about 250 agencies, groups, individuals and nearby ***depository libraries*** in January 1994. A 45-day public review period ended on March 21, 1994. A public meeting with an open house format was held in Boardman on February 24, 1994 to review and receive comments on the DEIS. Chapter 9 of this FEIS records, categorizes, and provides responses to comments on the DEIS. This FEIS also provides updated information on the design of the project.

BPA will use the FEIS to help decide whether to provide wheeling services to PGE. No action can be taken on the transmission part of this project until 30 days after the FEIS is made public. BPA will prepare a ***Record of Decision*** (***ROD***) that explains BPA's decision on the project. BPA will mail the ROD to those agencies, groups and individuals on the project mailing list.

5. Environmental Consequences

This section describes the impacts of the proposed action and alternatives to the proposed action on the environment. Most impacts are from the proposed cogeneration plant.

Impacts are organized by proposed action, that is, impacts to resources from the cogeneration plant are first, followed by impacts from the transmission line and the natural gas line. Impact matrices are provided at the beginning of these impact discussions and provide an overview of predicted impacts. Impact narratives follow the matrices and provide more detailed explanations of predicted environmental consequences.

Environmental Impact Definitions - Analysts evaluated the proposed action and alternatives to determine if these actions would cause significant adverse change to present environmental conditions. A significant adverse change to present environmental conditions would satisfy one or all of these outcomes:

1. Create an effect that cannot be mitigated.
2. Significantly reduce the quantity or quality of a regionally or nationally significant resource.
3. Pose a clear risk to human health or safety.
4. Affect the long-term productivity of the affected environment.
5. Irreversibly or irretrievably damage the environment.
6. Consume significant quantities of non-renewable natural resources.

Analysts considered short-term and long-term impacts. Impacts that do not meet the definitions above, or that can be mitigated, are not considered significant.

5.1 Impacts of the Proposed Action

5.1.1 Coyote Springs Cogeneration Plant Impacts

Impacts predicted to occur from the cogeneration plant are summarized in Table 5-1. Narrative descriptions of predicted impacts are provided below.

Land Use Impacts - Cogeneration Plant

Construction of the proposed power plant would alter the land use at the proposed site from gravel mining to an industrial use. The proposed project has been sited in an industrial park and is appropriately zoned for the proposed use. Power-generating facilities are permitted uses in the Port Industrial Zone, under the Morrow County Zoning Ordinance, MC-C-2 Section 3.073 (1)(L). A land use compatibility statement for the proposed use was approved by the County of Morrow

and the City of Boardman in September 1991. The City of Boardman submitted a letter commenting on the DEIS that states that the project is in complete compliance with zoning and the City's Comprehensive Plan. Furthermore, the proposed project would be surrounded by other industrially zoned parcels. No land use conflicts or incompatibilities with existing or future industrial land uses are anticipated.

Transportation Impacts - Cogeneration Plant

Possible train derailments adjacent to the proposed project site are unlikely to impact any of the proposed facilities (Egan, 1993). With a permanent work force of 20-30 full-time employees, the proposed project would generate approximately 40-60 vehicle trips per day in the local area. Construction vehicles and equipment used in the construction of the proposed project could damage existing roads in the local area.

Mitigation - Road improvements necessary to provide access to the proposed facility could be financed and constructed by PGE in accordance with the Morrow County Street Classification policies and the County's Transportation Policy #10. Prior to any construction activities taking place, PGE could place sufficient funds in escrow to return any roads damaged during construction to their preconstruction condition.

Recreational Impacts - Cogeneration Plant

Recreational facilities and opportunities in Morrow County would not change as a result of this project (PGE, 1993).

Construction noise could cause short-term impacts; noise could increase to 68 dBA L_{max} for 4 hours (PGE, 1993). Temporary disturbance of recreational opportunities at Messner Pond may occur during plant construction due to increased noise levels. Plans to develop recreational trails and/or other facilities would not be impacted by developing the power plant near the west side of Messner Pond. No disturbance of recreational opportunities at Messner Pond during facility operation is expected, so no mitigation is needed.

Primary recreational facilities and opportunities within the 8-km (5-mile) impact area are at the Umatilla National Wildlife Refuge, Boardman Marina Park, Coyote Springs Wildlife Area, and Riverside High School. These facilities would not be impacted by the proposed plant.

The visual impact discussion describes visual impacts to recreational areas and activities.

Impact Table - Coyote Springs Cogeneration Plant

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
WATER				
Resulting from Construction Activities				
Messner Pond	Unlikely	None	NPDES requirements	DEQ 1200 C
Columbia River	Unlikely	None	NPDES requirements	DEQ 1200 C
Unnamed Irrigation Pond	Certain	Moderate	NPDES requirements	DEQ 1200 C
Resulting from Facility Operation				
Shallow aquifer water quality	Unlikely	Slight	None	Water Rights Permit
Degradation of water quality	Unlikely	Slight	City of Boardman's sewa treatment facility	None
Deep aquifer lowering of w table	Possible	Slight	None	Water Resourc Permit
Spills of fuel or other hazardous materials	Unlikely	Major	NPDES requirements	None
Fisheries impacts	None	None	NPDES requirements	DEQ 1200 C
Wetlands/Messner Pond	Unlikely	Slight	NPDES requirements	DEQ 1200 C
Boardman sewer facilities	Likely	Unknown	None	None
VEGETATION				
Habitat disturbance	None	None	Recontouring and revegetation	None
Sensitive plant species	None	None	None	None
WILDLIFE				
Fauna				
Mortality of individuals	Unlikely	Unlikely	None	None
Temporary displacement	Unlikely	Unlikely	Place fence around swall nests and plant trees o west shore of Messner Po	None
Stress in crucial life cycle times	Unlikely	Unlikely	None	None
Wildlife Habitat				
Wildlife habitat impact sh steppe	Minimal	Unlikely	None	None
FISH				
Mortality/displacement	Unlikely	None	None	None
SPECIAL STATUS SPECIES				
None found in project area	None	None	None	None

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
THREATENED AND ENDANGERED SPECIES (Federally Listed)				
Plants				
None found in project area	None	None	None	None
Wildlife				
Peregrine falcon	Unlikely	None	None	None
Bald eagle	Unlikely	None	None	None
Fish				
Salmon River fall chinool salmon	Unlikely	None	None	None
Salmon River spring/summ chinook salmon	Unlikely	None	None	None
Salmon River sockeye salmon	Unlikely	None	None	None
GEOLOGIC HAZARDS				
Seismic Hazards (Possibil that ground shaking, fault c soil liquefaction, or seism induced waves and floodin could affect the integrity c facility.)	Possible	Local area	Construct facilities accor to the Uniform Building Code, and the appropriate importance factor for essential and hazardous facilities.	Building Perm
SOIL				
Wind erosion due to remova vegetation	Slight	Localized short-term	NPDES Requirements	DEQ 1200 C
Water erosion due to remo of vegetation.	Slight	Localized short-term	NPDES Requirements	DEQ 1200 C and Plot Plan Revi Permit
LAND USE				
Land use will change fron vacant to industrial.	Certain	Localized	None	None
Plant will generate approximately 50 vehicle each day.	Likely	Localized	Project proponent could f necessary road improvements.	None
Construction vehicles ma damage local roads	Unlikely	Project Area	Project proponent could f any repairs necessary t repair roads to preconstruction conditi	None
CULTURAL RESOURCES				
Historic, cultural and archeological resources	Unlikely	None	Site-specific survey	None
SOCIOECONOMIC				
Significant increase in th assessed value of Morrow County	Likely	County-wide	Positive impact	None
Construction and operation proposed project will incre employment in local area	Likely	Local area	Positive impact	None

Table 5-1
Impact Table - Coyote Springs Cogeneration Plant

Impact Table - Coyote Springs Cogeneration Plant

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
SOCIOECONOMICS Cont.				
Construction of proposed project will increase dema for temporary housing	Likely	Local area	None	None
Incremental increase in demand for law enforceme and fire protection servic	Likely	Plant/local ar	Increased property tax revenue should more tha compensate for increase demand	None
Increase in school distri enrollment	Likely	County-wide	Increased property tax revenue should more tha compensate for increase costs	None
Increased demand for libra services.	Likely	Slight-local area	Increased property tax revenue should more tha compensate for any increased demand.	None
RECREATION				
Nearby recreation sites	Unlikely	None	None	None
VISUAL AND AESTHETIC RESOURCES				
Nearby residences, Washington Highway 14, I- Columbia River, portions of Umatilla Wildlife Refuge, a the Coyote Springs State Wildlife Refuge.	Likely	Moderate	(1) Paint buildings and exhaust stacks in neutr shades to minimize visu impacts. (2) Minimize th amount of exterior lightin night. (3) Use native mat landscaping.	None
Other key observation points	Unlikely	Slight	(1) Paint buildings and exhaust stacks in neutr shades to minimize visu impacts. (2) Minimize th amount of exterior lightin night. (3) Use native mat landscaping.	None
PROTECTED RESOURCES				
Oregon DOE designated protected resources	Unlikely	Slight	None	None
PUBLIC HEALTH AND SAFETY				
Toxic and hazardous waste	Minimal	Localized area	Requirements of SPCC Pla pursuant to the Clean Wa Act	None
Electric fields	Likely	None	Standard safety precautions	None
Magnetic fields	Likely	Unknown	None	None
NOISE				
Construction noise	Likely	Significant, localized/short term	None	None
Operation noise (increase above background)	Likely	Insignificant, localized/long-term	None	None

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
OTHER ENVIRONMENTAL ISSUES				
Global warming	Likely	Slight	Control emissions by be available control technolo Natural gas used as fue	None
Acid rain	Likely	Slight	NOx emission minimized with selective catalyt combustion.	None
AIR QUALITY				
Particulates released duri construction	Likely	High-localized	Wet soil as needed.	None
Mist from cooling tower	Likely	Localized-slight	None	None
Criteria Pollutants				
NOx	Likely	Moderate	Analyze impacts to so vegetation and visibili demonstrate non-impact Class 1 areas. Use "bes available control technology."	Prevention of Significant Deterioration (PSD), and DEQ Air Contamina Discharge Permit
CO	Likely	Moderate	See above	Prevention of Significant Deterioration (PSD), and DEQ Air Contamina Discharge Permit
SO2	Likely	Slight	Use of natural gas	DEQ Air Contaminant Discharge Permit
TSP/PM-10 (Particulate Matter)	Likely	Slight	See above	DEQ Air Contaminant Discharge Permit
Air Toxins				
Iron, arsenic, barium, sil (cooling towers)	Unlikely	None	None	None
Ammonia (Boilers and turbines)	Likely	Slight	Selective catalytic redu system adjusted to mini ammonia release.	DEQ Air Contaminant Discharge Permit
Formaldahyde (Boilers and turbines)	Likely	Slight	Good combustion controls	DEQ Air Contaminant Discharge Permit
Odor	Unlikely	None	None	None
Photo-Chemical pollutants	Minimal	Slight	None	None

Table 5-1 (continued)
Impact Table - Coyote Springs Cogeneration Plant

Natural Resource Impacts - Cogeneration Plant

Soils and Geology

Soils - Minimal impacts to soils are expected from plant construction other than construction-related impacts such as fugitive dust leaving the site, and erosion caused by soil disturbances during construction. Determination of soil impacts are based on soil characteristics, topography, vegetation, and erosion elements including water and wind. The proposed project site is mostly flat, dry, and sparsely vegetated. Water erosion would be minimal because soils are permeable. Topsoil and vegetation must be replaced to avoid wind erosion. An Erosion and Sedimentation Control Plan was prepared for the Coyote Springs Plant by Ebasco (see Appendix H). The plan was approved by the Morrow County Planning Department on December 6, 1993. Measures such as sediment basins, sediment traps, storm inlet protection, and drainage swales would be used to control erosion and sedimentation.

Seismic Hazards - Earthquake damage to structures is based on the magnitude of the event, distance from the earthquake epicenter, type and depth of soils, degree of saturation of underlying soils, and type of construction and materials used in the structure.

The proposed project site is east of the Cascade Mountain Range in Oregon and within seismic Zone 2B, according to the 1991 Edition of the UBC. Construction must be based on the seismic zone factor Z of 0.2 (.2g-Acceleration/gravity) or greater in this area. Structures designed to pass this code are considered appropriate for occupant safety for a seismic event with a 475-year return period. However, facilities may be inoperable or unsafe. The minimum code is adjusted depending on the type of facility and soil conditions at the site.

To ensure essential facilities are operable and hazardous facilities (containing or supporting toxic or explosive substances) would not endanger the public, the seismic zone factor is multiplied by an importance factor of 1.25. The seismic zone factor for construction of this type of facility in this zone is .25 (for a seismic event with a 950-year return period).

Soil type at the plant site may raise the seismic zone factor and require an appropriate change in building construction. Soil liquefaction is a phenomenon in which loose, submerged, cohesionless soils lose strength during cyclic loading in strong earthquake ground shaking. Clay soils and an increase in the density of cohesionless soils minimizes this effect. A Standard Penetration Test (SPT) was conducted to determine the density of the soils at the plant site. (PGE, 1993.)

Seismic Risk - The Coyote Springs Project location is within seismic zone 2B. The ODOE Proposed Order, (Appendix D, page 22) requires that PGE design and construct the facility to address any estimate of peak ground acceleration which exceeds that covered by seismic zone 2B.

Ground Shaking - All non-critical buildings and structures would be designed and constructed in accordance with the latest UBC requirements with an importance factor of 1.00. All critical project structures would be designed and constructed with an 1.25 importance factor.

Fault Offset Hazard - The likelihood of surface rupture or fault offset in the project area is very remote, due to the lack of identifiable active faults in the area.

Soil Liquefaction - Loose layers of fill in upper materials at the site would be compacted to minimize the potential for soil liquefaction. The potential for liquefaction in underlying dense and very dense soils is slight.

Seismically Induced Waves and Flooding - During strong earthquakes, strong waves such as tsunamis or seiches can be generated in large bodies of water. These waves can cause substantial damage to shoreline facilities. Seiches occur in large inland bodies of water such as lakes or wide rivers.

The site is about 190 m (625 ft.) south of the Columbia River. Columbia River water levels are controlled by a system of dams to a minimum pool level of elevation 78.3 m (257 ft.) and a maximum pool level of 81.7 m (268 ft.). The plant site elevation is 86.7 m (285 ft.), which is well above the maximum pool level. An existing earth embankment for the railroad is between the river and the main plant site. The chance of seismically-induced wave damage such as a seiche, and damage from flooding is remote.

Stability - Plant operations would not impact site stability. Heavy equipment would be operated on properly designed spread footing and mat foundations. Water storage tanks would be supported on grade and on ring footing foundations. All foundations would be on compacted fill placed over the DDC-densified fill during construction. Chemical storage tanks would be surrounded by confinement barriers to contain potential spills or leakage. Barriers would be either a reinforced concrete slab with surrounding perimeter walls or a perimeter earth berm with a waterproof membrane.

Fish and Wildlife Impacts - Cogeneration Plant

Fisheries - Potential impacts to fish and wildlife during construction and operation of the proposed project were evaluated based on the likelihood that the project would cause direct mortality of individuals, temporary or permanent loss or alteration of habitat, or disturbances that may cause wildlife to avoid areas of suitable habitat.

Filling the gravel pond at the plant site would likely eliminate fish and low-quality fish habitat. The number and kind of fish impacted is not known, but would not be significant based on the poor quality of fish habitat and the limited recreational fishing that occurs there.

No impacts on water quality or fish habitat would occur in the Columbia River or Messner Pond from construction or operation of the proposed project. During operation, all wastewater from the plant would be discharged to the Port's industrial wastewater system. Wastewater with oil contaminants would be treated prior to discharge to the City of Boardman sewage treatment facility.

Wildlife - About 9 ha (22 acres) of wildlife habitat of varying quality would be permanently lost from construction of buildings and other project facilities at the main plant site. Some direct mortality of wildlife could occur during project construction. This is particularly true for less mobile species such as reptiles and small mammals, burrowing species (e.g., ground squirrels), and ground-nesting birds (e.g., lark sparrow, western meadowlark) in areas where vegetation clearing and construction equipment traffic would occur. The impact of this loss of wildlife is considered insignificant due to the low quality of habitat that currently exists there. Proposed landscaping around the site following construction would provide new, although low-quality, wildlife habitat.

During construction and operation of the cogeneration plant, wildlife use of Messner Pond could be inhibited by increased human activity. This is particularly true for species most sensitive to visual and auditory disturbances (e.g., mule deer, some raptors). However, a well-developed riparian fringe dominated by Russian olive trees surrounds much of Messner Pond, and would provide some buffering of visual and auditory disturbances from the main plant site. In addition, wildlife use of the pond and surrounding habitat currently exists with daily visual and auditory disturbances from trains, trucks, and a rock-crushing plant. These existing sources of noise and visual disturbance are closer to the pond than construction activities at the plant site would be.

PGE conducted a detailed study of cooling tower impacts to Messner Pond. Operation of the cooling tower may deposit dissolved chemicals contained within drift water droplets into Messner Pond and on surrounding vegetation. The chemicals of greatest concern, heavy metals, would either be nondetectable or only present in trace amounts. The majority of dissolved chemicals in drift water occur commonly in nature (salts). The operation of the cooling tower is not expected to result in adverse effects to Messner Pond water quality and surrounding vegetation, and any change in chemical composition within the pond would be below levels considered toxic.

Mitigation - PGE, in conjunction with ODFW, prepared an Ecological Monitoring Program. This plan is in Appendix E. This plan outlines a number of actions that will be taken to prevent project impacts to fish, wildlife and vegetation.

To provide a visual and sound buffer, PGE proposes to plant trees along the west shore of Messner Pond. The plantings would extend from the railroad embankment to the gravel pond.

If other concerned agencies or subsequent studies indicate there would be adverse impacts on fish, wildlife, or their respective habitats, PGE would develop and implement (in conjunction with ODFW) a ***mitigation*** plan and other measures as may be deemed necessary to offset anticipated impacts.

Threatened and Endangered Species Impacts - Cogeneration Plant

Federally Listed Animals - Impacts to listed threatened or endangered animal species were evaluated by Beak Consultants. A copy of their Biological Assessment in Appendix C. The bald eagle, the peregrine falcon, and three salmonoids are the only listed species known or suspected to occur in the project area. Specialists evaluated impacts using the following general criteria: potential of the project to cause direct mortality of individuals, alter suitable habitat either temporarily or permanently, or cause a disturbance (visual or auditory) that results in avoidance of suitable habitat. The Biological Assessment concludes: "the proposed action may effect, (sic) but is not likely to adversely effect (sic) individuals or populations of the bald eagle or its habitat. It is also concluded that the proposed action will not effect (sic) individuals or populations of the peregrine falcon, Snake River spring/summer chinook salmon, Snake River fall chinook salmon, and Snake River sockeye salmon or their habitat. These conclusions are based on strict adherence to the conservation measures described herein..."

Measures defined to reduce impact on listed species are described in Appendix C, and PGE has agreed to adhere to these measures. Possible actions include: erection of perch guards to protect raptors from electrocution; provide information to construction workers on minimizing disturbance; planting of trees along the shore of Messner Pond; construction of a sediment retention pond to protect water quality; monitoring wildlife impacts during construction, and if necessary, consulting with the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service if unanticipated impacts occur.

BPA has reviewed the Biological Assessment and concurs with the opinion that the Coyote Springs Cogeneration Project is not likely to affect the bald eagle and the peregrine falcon. A copy of this detemination and the Biological Assessment were sent to the U.S. Fish and Wildlife Service. BPA also agrees with the no effect determination regarding impacts to threatened or endangered salmon species. BPA provided the National Marine Fisheries Service with a copy of the Biological Assessment and the no effect determination. (See also Cumulative Impacts.)

State Special Status Species Impacts - Special status species identified within the project area were described in Chapter 4. See Federally listed species if a species is listed by both the state and Federal government. Although four species of concern (American white pelican, Franklin's gull, bank swallow, and long-billed curlew) were documented to occur in the project area, only the bank swallow colony on the plant site would potentially be impacted by the proposed project.

Based on field surveys, bank swallow populations in the area appear abundant. On the railroad embankment just north of the project site, 3-4 dozen nest holes were observed. It is estimated that 12 pairs are actively using these nests. PGE proposes to build a fence to restrict pedestrian and equipment intrusion near the bank swallow colony. The fence would be a three-strand wire fence about 1.5 m (5 ft.) high and would extend about 76 m (250 ft.). The fence would be about 7.6 m (25 ft.) south of and parallel to the bank swallow colony site. The fence would have a sign that identifies the area as sensitive bird habitat. The fence would be built during the winter, prior to the first arrival of any bank swallows (April 1). Based on these measures, project construction is not expected to negatively impact the bank swallow colony.

PGE has prepared an Ecological Impact Monitoring Plan (Appendix E), in conjunction with the ODFW to insure protection of nearby vegetation, fish and wildlife. Potential measures included in the plan are: seasonal restrictions on construction within a species-specific radius of a nest site (e.g., Swainson's hawk, long-billed curlew) or colony location (e.g., Washington ground squirrel); and placement of nest platforms on transmission towers for raptors (e.g., Swainson's hawk, ferruginous hawk).

Federally Listed Plants -There are no known or suspected Federally listed threatened or endangered plant species within the project area. A survey for threatened and endangered plants, conducted during spring 1993, identified no special status plant species (see Appendix A).

State Special Status Plants - Potential impacts on special status plant species were evaluated relative to OAR 603-73-090. A survey for threatened and endangered plants, conducted during spring 1993, identified no special status plant species within the impact zone (see Appendix A).

Water Impacts - Cogeneration Plant

Construction of the proposed project could also cause erosion from stormwater or wind. Ground disturbing activities during construction of the proposed project could lead to erosion of unprotected soil, which could cause siltation of adjoining waterways. The Oregon Department of Energy's Proposed Order imposes a series of conditions on PGE relating to preventing water impacts. A copy of the Proposed Order is in Appendix D. A ***stormwater pollution prevention plan (SWPP Plan)*** was prepared by PGE and approved by Morrow County in December 1993. A copy of the plan is in Appendix G. PGE also has prepared an Erosion and Sedimentation Control Plan (see Appendix H). This plan will serve as a guide to protect water from soil disturbing activities during construction of the plant.

Surface Water - No direct impact to the Columbia River is expected from construction. Plant operation may reduce the volume of water in the alluvial aquifer and might reduce the volume of water recharging the river. Because the gradient is from the southeast to the northwest, the river is not expected to recharge the alluvial aquifer being used by the City of Boardman.

No direct impact to Messner Pond is expected by construction. Particulate deposition from cooling tower drift will not result in significant adverse impacts to Messner Pond air quality and surrounding vegetation (see Appendix I, Potential Cooling Tower Drift Effects on the Water Quality and Vegetation at Messner Pond).

Wastewater effluent from the facility would be discharged to the Port's industrial wastewater system. Effluent from the industrial wastewater system is used for crop irrigation (see Exhibit O, PGE, 1993). No adverse impact to protected areas is expected from use of this existing wastewater treatment system.

Impacts to the gravel quarry pond would be direct and long term**.** The impact would be caused by filling 1.25 ha (3 acres) of the pond with gravel (presently 4.36 ha [10.4 acres]) for the plant foundation. No impact is expected from plant operation. Mitigation for filling the pond is not expected to be required as pits excavated in dry land for obtaining fill, sand, or gravel are not regulated under the Clean Water Act (40 CFR328.3(e)) or under Oregon's Removal-Fill Law (OAR 141-85 010).

PGE has registered for coverage under the Oregon DEQ General Permit 1200 to construct and operate storm water control facilities and to discharge treated storm water to waters of the state (see Appendix G). Morrow County issued a National Pollutant Discharge Elimination System (NPDES) Storm Water Discharge Permit to PGE on May 27, 1993. An Erosion and Sedimentation Control Plan (Appendix H) was submitted by Ebasco Constructors Inc. and was approved by Morrow County on November 6, 1993.

Hazardous materials would be handled on-site and transported to the site according to applicable Federal and state requirements and the Spill Prevention Control and Countermeasure Plan (SPCC Plan). Accidental release or spill of hazardous materials is unlikely, and no adverse impacts to protected areas are expected.

Groundwater - Water needs and planned sources for the Coyote Springs Plant were described on pages 3-10 and 3-11. Existing permitted Port of Morrow wells will supply the plant. Carlson Sumps 1 and 2, and Port Well #3, alluvial aquifer wells, will provide 7.2 m^3/m (1910 gpm), a majority of plants water needs. Port Well #4, an existing deep basalt well, will provide 2.9 m^3/m (758 gpm). Water withdrawals from these wells were transferred from irrigation or industrial use in order to serve the Coyote Springs Plant. Well withdrawal rates to serve Coyote Springs will not increase from their present rates. The City of Boardman has agreed to provide a back up supply of 7.6 m^3/m (2,000 gpm) of water for Coyote Springs from their Ranney Collector (also alluvial).

The alluvial aquifer transmits water quickly and impacts from pumping are generally very localized. The rate of water withdrawals from the alluvial wells will not increase from existing levels due to the Coyote Springs Plant. Thus no significant changes in groundwater levels are expected due to alluvial groundwater pumping for the plant (CH2M Hill, 1994).

The hydrologic connection between the alluvial aquifer and the Columbia River creates a condition in which pumping from alluvial wells to serve the Coyote Springs Cogeneration Project could reduce flows in the Columbia River. The maximum water demand of the plant was calculated and is equivalent to a 0.17 cms (6 cfs) reduction of groundwater inflow to the John Day pool of the Columbia. Considering that flows in the John Day pool average over 8,495 cms (300,000 cfs), a 0.17 cms (6 cfs) reduction in flow is not significant.

Pumping from Port Well #4, which draws from the deep basalt aquifer, could cause a long-term reduction in the groundwater level. If unacceptable impacts due to pumping from Port Well #4 are observed in the future, the Oregon Water Resources Department (**OWRD**) has the authority to limit further appropriations and reduce the total pumping demand based on seniority of water rights. This authority has been exercised at the Ordinance Critical Groundwater Area (**OCGA**) which is located east of the Boardman near Hermiston. The OWRD is not considering expanding the OCGA. The City of Boardman's Ranney Collector (alluvial) provides a 7.6 m^3/m (2,000 gpm) backup water supply should withdrawals from the deep basalt aquifer be restricted.

In summary, no direct adverse impacts to groundwater are attributed to the Coyote Springs Plant. See section 5.1.4 for a discussion cumulative groundwater Impacts.

Impacts to groundwater from accidental spills of toxic or hazardous substances will be minimized through PGE's SPCC Plan which will be completed 90 days prior to operation of the plant.

Air Impacts - Cogeneration Plant

The Oregon DEQ issued an Air Contaminant Discharge Permit to PGE for the Coyote Springs Plant on April 6. 1994. A copy of this permit is in Appendix F. The permit imposes a variety of conditions and limitations on operation of the project. Air emissions and resulting impacts predicted are described in the following pages and tables.

Turbine and auxiliary boiler operations would generate significant quantities of NO_x and CO as well as lesser quantities of particulate matter, sulfur dioxide and VOCs. (See Table 5-2.) The quantity of pollutants emitted from the turbines would vary with ambient air density and load conditions; the denser the air and the greater the load, the greater the emissions. Emissions from the auxiliary boilers are more consistent and vary only with load. Worst case emission rates are expected to occur in the winter because cold air is denser than warm air and because the load is higher in the winter. The values presented as Plant Site Emission Limits in Table 5-2 reflect worst case operating conditions. Varying emission rates (including worst case) were used to predict impacts to existing air quality.

Impact of criteria pollutants emitted from the proposed facility were evaluated under the Prevention of Significant Deterioration/New Source Review process. Several criteria pollutants such as volatile organic compounds, sulfuric acid and beryllium are exempt from PSD process for this facility because they would be emitted in small quantities. Two EPA-approved Gaussian

dispersion models (ISC2ST and COMPLEX1) were used to predict the proposed facility's impacts on the Boardman airshed. Impacts were predicted for oxides of nitrogen, carbon monoxide, particulate matter, ammonia and formaldehyde. The emission points considered were the two 64 m (210 ft.) high turbine stacks, and the 56 m (185 ft.) high stack serving the two auxiliary boilers. Impacts were predicted for emission rates reflecting various loads. For each load condition, three separate model runs were made, one for each of the representative ambient temperatures -5.3°, 11.6°, and 29°C (22.5°, 52.8°, and 85°F). EPA screening meteorological conditions and additional wind speed/stability category combinations suggested by DEQ were used for all modeling runs. Mixing heights were set equal to worst case conditions as determined by the EPA SCREEN dispersion model. The models receptor grid extended approximately 21 km (13 miles) from the proposed facility. Receptors were spaced at 500-m (1,640-ft.) intervals except for fenceline and maximum impact receptors (around Canoe Ridge, Washington), which were spaced at 100-m (328-ft.) intervals.

Table 5-2
Potential Annual Emissions of Criteria Pollutants

ID	Description	Maximum Operating Hours[a]	Pollutant	Emissions		Total tons/yr.	Combined Total tpy[b]
				ppm	lb./hr.		
1 2	HRSG A & HRSG B Stacks	8,760 each	NO_x CO SO_2 TSP/PM_{10} VOC	4.5 15 NA NA .4	30 49 1.09 9 3	130 215 4.8 39 13	<u>260</u> 430 <u>10</u> <u>78</u> <u>26</u>
3	Aux Boiler A & Aux Boiler B Common Stack	8,760 each	NO_x CO SO_2 TSP/PM_{10} VOC	40 200 NA NA 10	17.7 58.6 0.22 1.84 1.66	77.5 257 0.96 8.06 7.27	155 <u>513</u> 2 16 15

a. Expected operating hours:
   1. HRSG emissions - 7,760 hours/year/unit.
   2. Auxiliary boilers - 1,000 hours/year/unit.
   Note: There may be cases where one turbine and one auxiliary boiler would operate simultaneously. However, the emissions from this operating scenario will not exceed the case where just two turbines are operating simultaneously.

b. Underlined values are proposed annual plant site emission limits (PSELs). Figures are rounded off to the nearest whole number.

NA - not applicable.

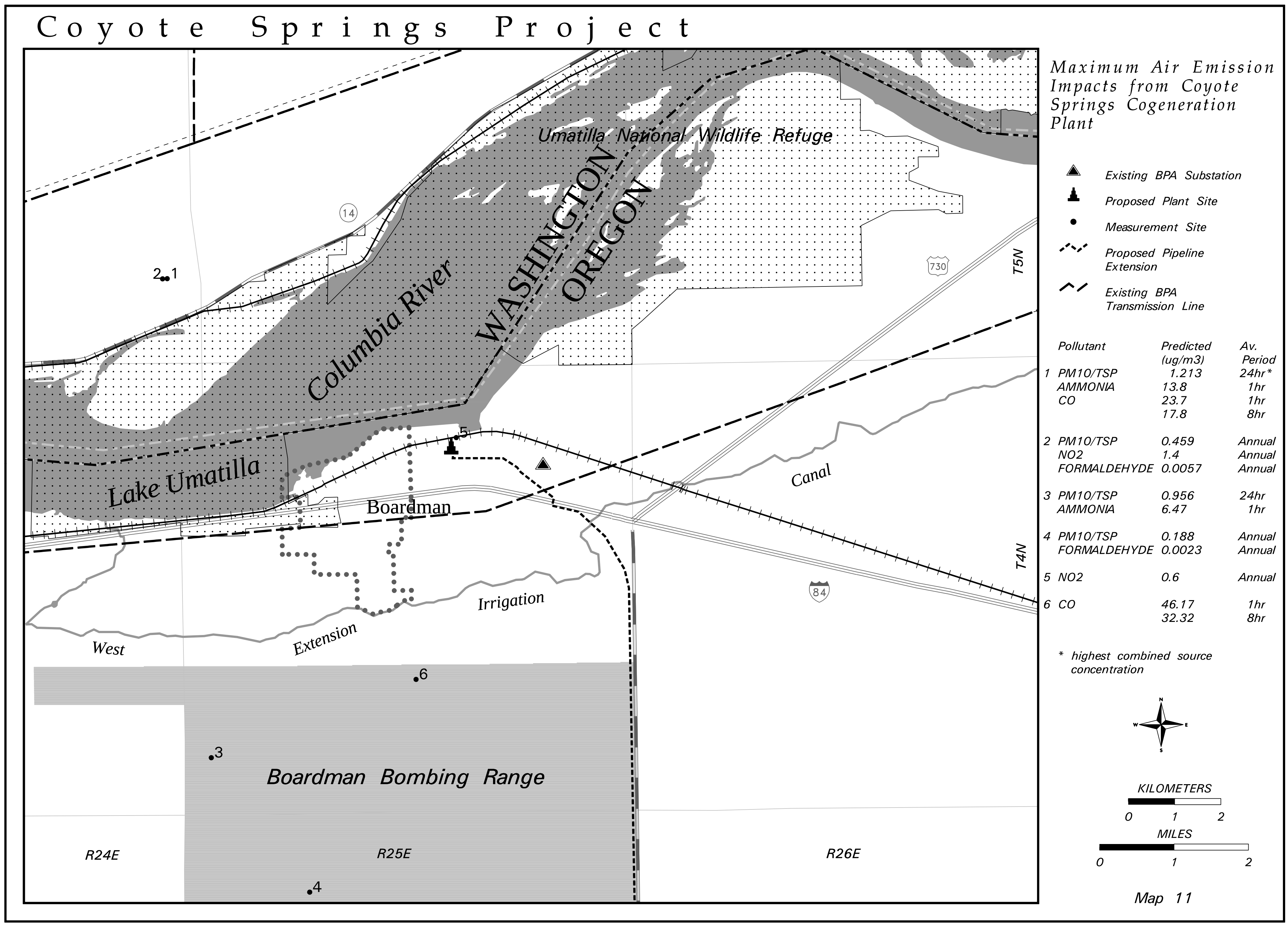
Maximum predicted ambient concentrations due only to proposed facility emissions are shown on Map 11. Canoe Ridge, 7.2 km (4.5 miles) northwest of the proposed facility in Washington, had the highest predicted impacts. Ambient concentrations on Canoe Ridge were predicted to be: NO_2 1.4 ug/m³ (annual average), PM-10 1.2 ug/m³ (24-hour average), CO 23.7 ug/m³ (1-hour average), ammonia 13.8 ug/m³ (1-hour average) and formaldehyde 0.0057 ug/m³ (annual average). The EPA NO_2 Significant Impact Level (40 CFR 51.165 (2) b (2)) is exceeded in Washington. Exceedance of the NO_2 significant impact level triggers the requirement for more comprehensive modeling of other competing NO_2 sources in the airshed (see discussion below). Predicted ambient concentrations of other priority pollutants did not exceed state or Federal significant impact levels, indicating that emission of these pollutants from the proposed facility would not significantly impact existing air quality. The maximum predicted PM-10 concentration in Oregon (0.956 ug/m³ - 24-hour average) approached the Oregon Significant Impact Level of 1 ug/m³ (OAR 340-20-220). Also note that the maximum Washington 24-hour PM-10 concentration (1.2 ug/m³) exceeds the Oregon significant impact level. See Map 12 for NO_2 contours and locations of maximum impact.

NO_2 competing-source modeling was accomplished for 37 significant NO_2 sources in the region, including two natural gas-fired cogeneration plants proposed for the Hermiston area. Competing-source modeling determined the amount of PSD increment remaining in the airshed after all proposed facilities are operational. The modeling also determined if the NAAQS would be exceeded. The entire airshed, with existing and proposed sources, would consume 13.6 percent of the available 25 ug/m³ NO_2 increment. PGE's Boardman Coal Plant and the NW Pipeline compressor station in Benton County, Washington 25 km northeast of Boardman are included in the computer modeling, but do consume increment because they were built prior to EPA's PSD regulations. The amount of NO_2 increment consumed by the Coyote Springs facility is 1.16 ug/m³. The maximum combined impact of the proposed facility and the 37 other NO_2 sources including the Boardman Coal Plant but not the compressor station, was predicted to be 31.4 ug/m³ NO_2 (annual average), occurring 500 m (1,640 ft.) southwest of the proposed facility. DEQ has determined that this area's background NO_2 concentration is 30 ug/m³. The predicted NO_2 combined impact (31.4 ug/m3) coupled with background concentration gives a total maximum impact of 61.4 ug/m³. The NAAQS NO_2 standard is 100 ug/m³.

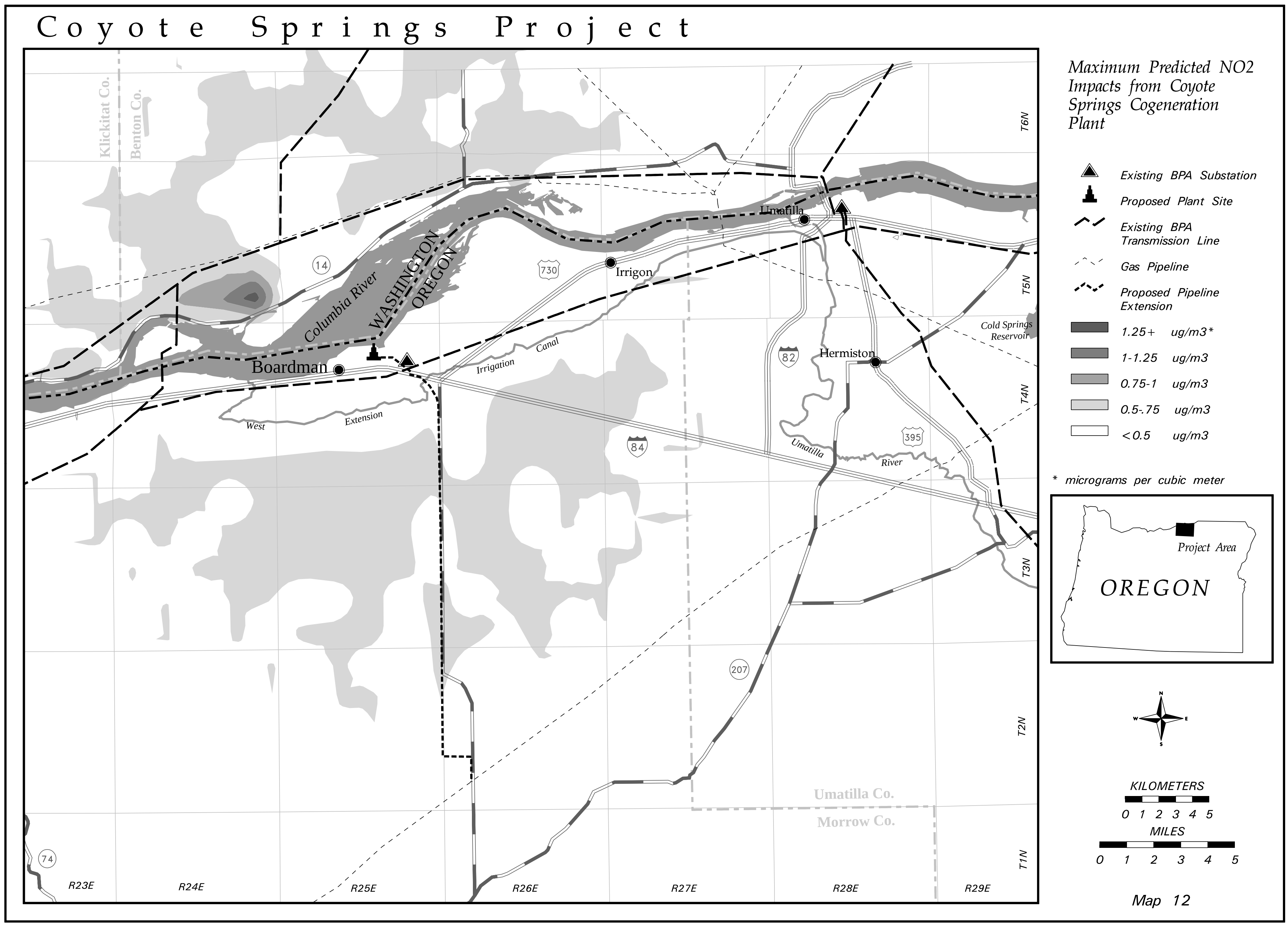
Chester Environmental also performed combined source modeling which included both the compressor station and the Boardman Coal Plant. With the compressor station, the highest predicted NO_x impact was located near the compressor station and was 485 ug/m³. The Coyote Springs Plants contributes only 0.135 ug/m³ (or 0.03 percent) to this total.

The NAAQS are designed to protect human health and the environment. Because none of the NAAQS would be exceeded in the Boardman airshed because of the proposed project, no measurable effects to local vegetation, soils, wildlife or human health should be expected to occur as a direct result of facility emissions. The NAAQS are exceeded in the vicinity of the compressor station. This exceedence may be affecting local vegetation/wildlife, however the proposed facility has insignificant impacts on this area's air quality.

Map 11. Maximum Air Emission Impacts from Coyote Springs Cogeneration Plant.



Map 12. Maximum Predicted NO2 Impacts from Coyote Springs Cogeneration Plant.



Odor - Ammonia is the only pollutant emitted from the proposed facility in significant quantity to possibly pose an odor problem. The highest predicted one hour ammonia concentration in Oregon was 6.47 ug/m^3**,** and 13.8 ug/m^3 in Washington, which are below the odor threshold for ammonia (26.6 ug/m^3). No odor impacts are expected.

Class I Areas and National Scenic Areas - The Valley screening mode of COMPLEX1 was used to predict the potential impacts to Class I areas. Modeled impacts were well below PSD Class I increments for all criteria pollutants and below detection limits in most cases. Model predictions indicate that there would be no measurable impacts to these sensitive areas from the criteria pollutants emitted by the proposed facility.

Effects of NO_2 on plant life in these Class I areas were also considered. Maximum modeled impacts of NO_2 are at least two orders of magnitude below the U.S. Forest Services' *No Impact Level* for lichen and all plant species. Impacts on aquatic resources in Class I areas are also expected to be nondetectable.

EPA-recommended visibility analysis model VSCREEN was used to evaluate the visibility impacts of the proposed facility on nearby Class I areas. Modeled results predict that the proposed facility would not adversely degrade visibility in the nearby Class I areas or in the Columbia Gorge Scenic Area.

Because no protected area is closer than 6 km (4 miles) to the proposed plant, no significant impacts are expected.

Air Toxics - Chester Environmental estimated emission rates of air toxics from the proposed facility (see Tables 5-3 and 5-4). Emission rates for the boilers and the turbines were derived from one of two methods: the California Air Resource Board Speciation Manual, or by using emission factors based on heat input published in EPA's *Toxic Air Pollutant Emission Factors* (EPA-450/290-011). Ammonia emission rates were provided by the selective catalytic reduction unit vendor (Peerless). Emissions from the cooling tower were calculated using mass balance techniques.

Calculated emission rates were compared to DEQ's significant emission rates. Dispersion modeling must be performed for all compounds emitted from new sources which exceed these rates. Dispersion modeling predicts the pollutants' ambient concentration. From this prediction an estimate of the environmental impacts can be made. Emissions less than the specified significant emission rates are presumed to have an insignificant effect on the environment. Only two toxic compounds were found to exceed the significant emission rates: formaldehyde and ammonia. Ammonia generated from the selective catalytic reduction unit is estimated at 434.4 tonnes (427.5 tons/year). Formaldehyde, a by-product of natural gas combustion, is estimated at 1029 kilograms (2,269 pounds)/year. Impacts from these two pollutants were modeled using an EPA-approved model (ISC2).

Table 5-3
Emission Rates for Known and Suspected Carcinogenic Pollutants

Pollutants of Concern	Total Emissions Firing Turbines[a] (lb/yr)	Total Emissions Firing Auxiliary Boilers[b] (lb/yr)	Total Emissions Firing Both (lb/yr)	DEQ Significant Emission Level (lb/yr)
Benzene	174	234	408	3,100
Formaldehyde	1,716	553	2,269	2,000

a. Assumes 7,760 hours/year/turbine multiplied by emission rate (lb/hr) in Table 5-3.
b. Assumes 1,000 hours/year/boiler multiplied by emission rate (lb/hr) in Table 5-3.

The highest predicted formaldehyde concentration in Oregon was 0.0023 ug/m³, at a location on the bombing range approximately 10 km (6.2 miles) south-southwest of the proposed facility (see Map 11). At this low level the only concerns are long-term health effects such as cancer. This concentration has an associated cancer risk of 2.49 x 10^{-8}, nearly two orders of magnitude less than EPA's acceptable risk level of one in a million (1 x10^{-6}) excess cancer cases. The highest formaldehyde concentration in Washington was 0.0057 ug/m³ at a location on Canoe Ridge (see Map 11). Formaldehyde emissions would not harm plants or animals.

The maximum predicted one hour ammonia concentration in Oregon was 6.47 ug/m³ at a location on the bombing range approximately 8 km (5 miles) southwest of the facility. This one hour impact corresponds to a 4.5 ug/m³ 8-hour average. Oregon's acceptable ambient concentration for ammonia is 170 ug/m³ (8-hour average). The maximum ammonia concentration in Washington was 13.8 ug/m³ (1-hour average) at a location on Canoe Ridge. Washington's Acceptable Source Impact Level for ammonia is 59.9 ug/m³ (24-hour average) and 0.077ug/m³ (annual average) for formaldehyde. Both the Oregon and Washington maximum predicted ammonia impacts are an order of magnitude below state safety thresholds and an order of magnitude below the inhalation ***No Observed Effects Level (NOEL)*** (Integrated Risk Information System December 1993). Maximum predicted ammonia concentrations would not adversely effect animals or plants. Maximum impact locations are presented on Map 11.

Table 5-4
Emission Rates for Non-Carcinogenic Pollutants

Pollutants of Concern	Total Emissions Firing Turbines[a] (lb/8 hr)	Total Emissions Firing Auxiliary Boilers[a] (lb/8 hr)	DEQ Significant Emission Level (lb/8 hr)
Ammonia (NH_3)	390.4	0	31
N-Butane	2.04	4.7	3,500
Cyclohexane	0	0.50	1,920
Hexane	0	0.5	3,210
N-Pentane	0.2016	3.1	3,300
Pentane	0.2016	4.7	3,300
Toluene	0	0.9	685
Chromium (Cr)	0.07	0	0.9
Cobalt (Co)	0.07	0	0.09
Copper (Cu)	0.07	0	2
Manganese (Mn)	0.07	0	6
Mercury (Hg)	0.00	0	0.2
Nickel (Ni)	0.07	0	2

a. Based on converting emission rates in Tables 7-1 and 7-2 to lb/8 hr. Emissions presented are from both turbines

Air Impacts from the Cooling Tower - An analysis of potential cooling tower drift effects is in Appendix I. Air toxins emitted from the cooling tower are presented in Table 5-5. All listed pollutants are emitted in small quantities and no impacts are expected to result from their release. Tolyltriazole, acrylate copolymer and potassium hydroxide are chemicals are corrosion/deposit inhibitors. Potassium Hydroxide, tolyltriazol and acrylate copolymer are not assigned Oregon significant emission rates, Washington acceptable source impact levels or Oregon acceptable ambient concentrations. However, Washington's acceptable source impact level for potassium hydroxide is 6.7 ug/m^3-24-hour average.

A hard-water mist, 5.0 liters (1.32 gal.)/minute with 2400 mg/L total dissolved solids would be emitted from the cooling tower. The volume of mist and distance the mist would travel before evaporating or condensing would vary with ambient temperature and humidity. Less mist would be emitted on cold, moist days than on warmer days. During damp, cold periods, the mist emitted would condense and deposit relatively close to the tower. During sunny, hot weather the mist would rapidly evaporate and disperse into the atmosphere.

Fogging would take place during cold moist periods and is expected to occur occasionally on Ullman Boulevard west of the plant but is not expected to occur on I-84. On average, the mist is expected to evaporate within 305 m (1000 ft.) of the tower, leaving behind a small amount of dissolved solids to disperse as particulate matter 130 kg (280 lb). (PGE, 1993.) Moisture emitted from the cooling tower which condenses and impacts the ground is called drift. Drift from the cooling tower would amount to one gallon/minute. The dissolved solids would contain small amounts of iron, silica, arsenic and barium (see Table 5-5). In addition, small amounts of tolyltriazole, acrylate copolymer and potassium hydroxide (corrosion inhibitors/ deposit control agents) would be emitted. The small amount of pollutants emitted from the tower would have no impact on the Boardman airshed.

Air Impacts from Construction Operations - Emissions generated during construction of the proposed facility would originate from temporary fuel oil tank(s), construction equipment, fugitive dust, and vehicles used by workers to commute to the site. Vehicle exhaust connected with construction operations would be insignificant compared to exhaust generated by traffic on I-84, located directly south of the proposed facility. Fugitive dust generated by construction operations would be minimized by soil wetting on an as-needed basis. Though dust would be controlled, there is expected to be some adverse, but short-term effects on local air quality during the early phases of construction.

Global Warming - Gases thought to contribute to global warming are commonly referred to as "greenhouse" gases. Greenhouse gases include: CO_2, methane (CH_4), nitrous oxide (N_2O), NO_x, non-methane VOCs and stratospheric ozone depleting substances such as chlorofluorocarbons.

Table 5-5
Calculated Cooling Tower Emissions

Chemicals	Water Concentration (mg/L)	Air Emissions (tons/year)	DEQ Significant Emission Rate (tons/year)	Oregon Air Regulations Citation
Total Dissolved Solids	2084	6	15 (jPM-10)	340-20-225
Total Suspended Solids	5.3	0.02		
Calcium	779	2		
Magnesium	476	1		
Sodium	205	1		
Iron	1.9	0.01		
Copper	ND	ND		
Zinc	ND	ND		
Chloride	168	0.49		
Sulfate	1085	3		
Phosphate	15.7	0.05		
Silicate	149	0.43		
Potassium	19.2	0.06		
Nitrate	9.8	0.03		
Antimony	ND	ND	5	340-32-450
Arsenic	0.042	0.0001	0.005	340-32-450
Barium	0.49	0.001		
Beryllium	ND	ND	0.008	340-32-450 (0.0004 in 340-20-225)
Cadmium	ND	ND	0.01	340-32-450
Chromium	ND	ND	5	340-32-450
Lead	ND	ND	0.6	340-32-450 (same in 340-20-225)
Mercury	ND	ND	5	340-32-450 (0.1 in 340-20-225)
Nickel	ND	ND	1	340-32-450
Selenium	ND	ND	1	340-32-450
Thallium	ND	ND		
Acrylate Copolymer	10.2	0.03		
Tolyltriazole	3.9	0.01		

ND - not detected.

The quantity of CO_2 emitted when fossil fuels are burned is proportional to the carbon content of the fuel. The more carbon present, the more CO_2 emitted. The proposed plant would use natural gas to fire the combustion turbines. Natural gas is primarily composed of methane, which contains one carbon atom and four hydrogen atoms. Because of its low carbon content, natural gas combustion produces about 40 to 50 percent less CO_2 than coal and approximately 25 percent less than petroleum products (Cornot-Gandolphe, 1993).

As mentioned above, the plant would use methane to fire the turbines. Methane is at least 20 times more potent a greenhouse gas than CO_2. Because of this, it is important to keep methane releases to a minimum. Methane emitted from the world's natural gas pipelines and natural gas mining operations is less than 10 percent of methane emitted from natural sources such as tundra, swamps, forest floors, termites and cows (Sheppard, et al., 1982). In addition, most natural gas leaks occur within residential distribution systems and not in wholesale distribution systems such as the one linked to this plant. New techniques have virtually eliminated methane escape during drilling.

The source of natural gas for the proposed cogeneration plant is from actively producing gas fields in Alberta and British Columbia, Canada. The number of natural gas wells that would be needed to supply PGE requirements was estimated by PGT. The average total yield of Canadian natural gas wells was divided into the total requirements of the Coyote Springs Plant (41 billion BTUs per day). Using this method, the output of 16 gas wells would be used each year by the Coyote Springs Plant (PGT, 1993). For perspective, 4,000 Canadian gas wells were drilled in 1991 and the total number of wells in Canada number in the hundreds of thousands (PGT, 1992). Thus the Coyote Springs Plant would use only a small amount of gas compared to that available in Canada. The world's proven reserves are expected to last approximately 58 years at the present consumption rate (*Inside Energy/with Federal Lands, 1993*).

Emissions of NO_x from the facility would be controlled by best available control technology.

Reducing greenhouse gas emissions also involves energy conservation. If less fossil fuel is consumed, fewer pollutants are generated. Cogeneration facilities are considered energy efficient because excess steam generated from power production is used by nearby industries that would otherwise generate their own steam, which would consume energy.

President Clinton has committed the United States to reducing its greenhouse gas emissions to 1990 levels by the year 2000. The Clinton administration has issued a Climate Change Action Plan to accomplish this objective. The plan encourages the use of natural gas as opposed to other fossil fuels, for power generation, energy conservation measures, and reforestation projects. Currently, PGE does not plan to offset plant CO_2 emissions with reforestation.

In summary, the proposed plant's comparatively low CO_2 emissions, the gas industry's low percentage of losses in the wholesale gas distribution system, the plant's control of NO_x and N_2O emissions, and the facility's cogeneration capability combine to minimize the plant's global warming impacts. However, plant impacts could be further reduced by reforestation.

Acid Rain - SO_2 and NO_x are the main precursors to acid rain. The proposed facility would emit significant quantities of NO_x but not SO_2. NO_x emissions are being minimized by selective catalytic reduction. The selective catalytic reduction process not only reduces NO_x emissions, it also releases ammonia into the atmosphere. Ammonia has the capacity to act as a buffer and helps minimize nitric acid (acid rain) formation. Because of these factors, the proposed plant is not expected to significantly contribute to downwind acid rain.

Photochemical Pollutants - NO_x and VOCS emitted from the proposed facility can form other pollutants in the presence of sunlight. During stable atmospheric conditions, when sufficient quantities of ultraviolet light are present, NO_x can form detectable levels of tropospheric ozone, peroxyacetal nitrate and peroxybenzoyl nitrate, which are respiratory and/or eye irritants at elevated concentrations. In addition, these pollutants, along with NO_2, form aerosols that reduce visibility and give the atmosphere a brownish cast. Most volatile organic compounds emitted from the facility can form ozone in the presence of ultraviolet light. Volatile organic compounds are not emitted in large enough quantities to form detectable levels of ozone. Photochemical pollutants from plant emissions are expected to have a negligible impact on the Boardman airshed and no detectable impact on human health.

There are several reasons why photochemical pollutants would not accumulate in this area: (1) this area is rural and does not generate many pollutants, (2) at this latitude, high angle radiation necessary for photochemical pollutant formation only occurs during a short period of the year, (3) wind channeling by the Columbia River prevents pollutant build up, and (4) stable atmospheric conditions (necessary for pollutant buildup) only occur in this area approximately 5 percent of the year, predominately during night and early morning hours when UV radiation is absent or at too low of an angle to generate photo chemical pollutants (Thorkildson, 1993). Aerosols formed from photochemical pollutants and NO_2 may have some impact on local visibility during stable atmospheric conditions.

Vegetation/Wetland Impacts - Cogeneration Plant

Appendix I presents an analysis of potential cooling tower drift effects on water quality and vegetation. Impacts to wetland plant communities are not expected to be significant.

Socioeconomic Impacts - Cogeneration Plant

The construction, operation and maintenance, and eventual decommissioning of a major cogeneration facility can create both short-term and long-term impacts on the social and economic resources in a community. Socioeconomic impacts have been separated here into short-term impacts (preconstruction/construction/maintenance and decommissioning) and long-term impacts (facility operation). The study area to identify these impacts includes portions of Morrow and Umatilla counties in eastern Oregon.

Short-term socioeconomic impacts would include those impacts associated with construction of the proposed project, so-called “boom/bust” effects. Long-term impacts would include impacts on population, housing, employment, and impacts on local government services and infrastructure such as schools, health care, library services, solid waste disposal and water and sewer services.

It is difficult to forecast the short-term socioeconomic impacts related to large construction projects in rural areas. Uncertainties such as labor disputes, material shortages or weather-related problems may affect the peak level of the number of construction workers. Construction employment is the key variable affecting socioeconomic impacts for the short term.

Other impacts could include secondary impacts on the local economy, such as an increase in the supply and demand for goods and services, which could affect the price of these goods and services; an increase in crime with an increased population; and the temporary disruption to the agricultural resource from crop disturbances. Secondary impacts related to the construction work force are expected to be minor.

Increase in Tax Revenue - Construction and operation of the proposed project would significantly improve the assessed value of taxable property in Morrow County, and increase the local property tax revenues received by Morrow County. With PGE’s capital investment of between $150 and $300 million depending on whether the utility constructs one unit or two, the assessed value of real property within the county would be expected to increase from 20-40 percent. BPA, as a Federal agency, pays no local property taxes so no revenue would be received by the county from BPA’s new transmission facilities. BPA’s investment in the proposed project, however, is negligible.

The proposed project is within Morrow County tax code area 25-04, one of 33 tax code areas within the County. The current tax rate (for tax year 1993/94) for this tax code area is $21.24. The actual ad valorem taxes that can be collected under Oregon's Measure 5, has been reduced to $17.85/per thousand of valuation (for this particular tax code area) for tax year 1993/94. Assuming the first tax year that the proposed plant would be assessed property taxes would be tax year 1995/96, the maximum amount that could be collected for the Morrow County School District would be $5.00 per thousand, plus any bonded indebtedness, and $10.00 per thousand for general government, plus any bonded indebtedness. Bond levies are unaffected by Measure 5.

Property taxes generated by the proposed plant would likely range between $750,000 and $1,500,000 annually (in 1993 dollars) for the Morrow County School District, and between $1,500,000 and $3,000,000 for general county government, plus any bonded indebtedness, depending on whether PGE completed one or both units. Tax revenue received by the County would be shared with the City of Boardman (Sweek, August 1993).

Although the new revenue would be a significant increase in the amount of local taxes received by the county, it is doubtful, according to the Oregon Department of Revenue, that the increase would have the effect of reducing individual tax burdens, due in part to limitations placed on individual taxing districts by Measure 5. New revenue could reduce individual taxes, however, if the total amount collected exceeded the amount required by individual taxing entities (Oregon Department of Revenue, August 1993).

Although the state does not receive any property tax revenues generated at the local level, the state would likely benefit from the proposed project because the state's contribution to Morrow County School District, if any, as a result of the reductions required under Measure 5, are likely to be less with the plant than without it. The state needs to make up the difference of what is collected under Measure 5, and the actual cost of operations of the Morrow County School District, as well as the other 266 school districts in Oregon. Differences have not been computed, because of the number of unknown variables.

Population - The proposed project is not expected to add significantly to the area's population. Assuming half of the permanent jobs come from outside the local area, an added 12 employees and their families would relocate to the area. Assuming 2.5 persons per household, this increase would be 30 individuals. Since this would be a population increase of less than 1 percent of Morrow County's population, there would be a negligible impact to the local population.

Employment - Construction of the proposed plant would likely take place over an 18-month period beginning in 1994. Construction of the power plant and attached substation/switchyard would peak with about 200 construction workers (Mayson, August 1993). In addition, about 130 construction workers would be required to construct the gas transmission line required to serve the facility, and another 20-25 construction workers would be required to construct BPA's portion of the project. While construction of the gas transmission line is expected to last five to six weeks (PGT, May 1993), construction of BPA's portion of the project is expected to be completed in one month or less.

As many as 355 construction workers are expected to work on various portions of the project, but not at the same time. While the three projects are expected to be constructed concurrently, peak employment could reach a total of 355 workers, depending on whether the peak period for the construction of the power plant coincides with construction of the gas pipeline. Because of the number of variables involved, it is difficult to accurately predict the actual number of construction workers in the area during the peak construction period.

Plant operation is expected to create about 20-30 full-time positions over the life of the facility. Three shifts are anticipated to be necessary to operate the plant: 16-20 workers during the day shift, and the remainder during each of two subsequent shifts. While this level of employment would not be considered to be a significant impact on the local area's employment base, due to the existing size of the labor force (28,000), it is considered a positive impact on employment in the local area.

Housing - The influx of non-local construction workers would likely affect the demand for temporary housing facilities in the local area. Construction of the proposed project and related facilities would require 355 workers, most likely from outside the local area. Construction is anticipated to begin in 1994 and be completed in 1995.

It is difficult to predict where construction workers would come from in advance of the award of a construction contract. It is assumed most craft workers would originate from the Tri-Cities area of southeastern Washington. Most individuals would likely commute to Boardman daily. Some of the workers would come from the local area. Some craft workers and laborers would be found in the local labor force. Craft workers would leave when their work is accomplished, to be replaced by other crafts persons. Not all of the construction work force would be present in the area at the same time.

A sufficient supply of temporary housing exists in the area to provide for the temporary housing needs of the non-local construction workers and their families. Because all facilities would likely be constructed concurrently, the vacancy rate is expected to be low, especially during the summer months of 1994-95.

The 1990 Census identified nearly 800 vacant units of rental housing (including both apartment units and single-family structures) in Morrow and Umatilla counties. In addition to these housing units, there are 11 motels that supply about 490 motel rooms in the Hermiston, Umatilla, and Boardman area. There are 20 mobile home parks in the Pendleton, Milton-Freewater, Umatilla, and Hermiston area, with seven RV/mobile home parks in the Hermiston area alone. All are within 70 km (45 miles) of the City Boardman. According to the Electric Power Research Institute (EPRI), which studied socioeconomic impacts from power plant construction and operation, including the Boardman power plant, construction workers frequently commute up to 97 km (60 miles) daily to project sites.

The City Manager of Boardman believes the 200-person construction workforce would create no problems for the City of Boardman. Mobile home parks and motels in the City, and the City itself, have been preparing for the influx of construction workers. (Palmer, 1993.)

Impact on Essential Government Services - Cogeneration Plant

Law Enforcement - Although the proposed project would likely increase the demand for law enforcement services over the life of the project, the Sheriff's Office does not feel this project alone would cause the county to hire additional law enforcement personnel (Morrow County Sheriff's Office, August 1993). Additional property tax revenue expected to be apportioned to the County Sheriff's Office from this project should offset any added costs caused by the proposed project.

Fire Protection - The facility would be designed to meet the code requirements of the UBC, as amended, by the state of Oregon and the National Fire Protection Association (NFPA) Standards. In addition, each gas turbine generator enclosure is protected by a self-contained, low pressure, CO_2 fire protection system. Various sensors would be provided as part of the system to automatically actuate the CO_2 fire protection system. An existing 7,600 m^3 (2 million gal.) water tank about 1 km (0.6 mile) south of the proposed site would also be available for fire suppression.

The permanent on-site work force would be trained in hazardous materials training, as are Boardman Rural Fire Protection District personnel (PGE, 1993).

Water Service - The Port will serve the water needs of the Coyote Springs Project from existing permitted wells. The Port estimates that there is approximately 3.8 m^3/m (1,000 gpm) of undedicated capacity available. The City of Boardman will supply up to 7.6 m^3/m (2,000 gpm) of unused capacity to the Port of Morrow for delivery to Coyote Springs. The City of Boardman has a water right for 61 m^3/m (16,000 gpm) of which only 25 m^3/m (6,600 gpm) is reported to be developed. Thus, the water service capability of the Port and the City of Boardman should not be adversely impacted by Coyote Springs.

Sewer Service - The proposed project is expected to generate about 33 m^3 (8,640 gal.) of sanitary wastewater per day into the City of Boardman's sewage treatment facility. (PGE, 1993.) Wastewater would flow through a 50-cm (20-inch) industrial sewer pipe just south of the proposed plant site. According to the City Manager, the sewer line and treatment facility are sufficiently sized to handle the sanitary wastewater that would be generated by the proposed plant. The City's sewage treatment facility is currently processing about 1136 m^3 (300,000 gal.) per day, with a capacity of 1520 m^3 (400,000 gal.) per day. The additional sanitary wastewater would not adversely impact the City's sewage treatment facility.

Sanitary waste generated during construction of the proposed project would be discharged into chemical facilities. These portable units would be pumped out periodically by licensed contractors into transport vehicles.

Education/Schools - The proposed project would likely impact the Morrow County School District by increasing student enrollment. The school district has recently completed a study that revealed an annual cost increase of $4,500 (in 1993 dollars) for each student added to the existing student enrollment within the district. Because the proposed plant would create an added 20-30 permanent new jobs in the area, not all filled with members of the Morrow County-Umatilla County labor force, it is likely a portion of the new residents would create an increase in the existing student enrollment, and increase district costs.

Because the proposed project would generate a minimum of an additional $750,000 in property tax revenue (in 1993 dollars) to the County-wide school district each year, the proposed project would need to impact the school district by more than 165 students before it would negatively impact the school district's budget (166 @ $4500 = $747,000).

If at least half of the new hires come from outside the Umatilla-Morrow County area, the in-migrants would need to impact the school district with more than an average of eleven students per household (15 x 11 = 165) to create a negative financial burden on the school district. This is unlikely. The proposed project would likely have a beneficial impact on the school district, and the state. Because the state has the responsibility of making up budget shortfalls experienced by school districts across the state, the state would also benefit by the proposed project because its financial responsibility would likely be less.

Library Services - The proposed project would have an impact on the demand for library services offered by the two libraries within the Oregon Trail Library District. The district presently employs four part-time employees, and a full-time director. While the proposed project alone would likely not create the need to hire additional library staff, the additional growth from a portion of the new employees who would relocate to the local area would put an increased demand on library services. This demand, along with the increased demand from growth that would occur because of the plant, would likely create the need for either a new position or an increase in hours worked by existing staff (Oregon Trail Library, August 1993).

The increased property tax revenue received by the library district would likely more than offset any costs incurred by the library as a result of the proposed project. No negative impacts to the library district are anticipated.

Health Care - Health facilities in the local area are sufficiently staffed to handle any medical needs that may arise both for short-term construction personnel and for the increase in the resident population from the proposed project.

Solid Waste Disposal - The proposed plant is expected to generate about 275 kg (600 lb) of solid waste per month. This amount should not create a burden on the Finley Butte Landfill.

Impacts to Other Government Services - Other government services, such as maintenance of the County road system, vector control and the cemetery district, would receive tax revenue that would likely offset any increased costs in services. Though the proposed plant site is outside the City of Boardman, Morrow County government shares tax revenues received with other affected jurisdictions. According to the EPRI study mentioned previously on the socioeconomic impacts from 12 power plants, including the Boardman coal-fired power plant, impacts from the Boardman power plant have been minimal. Some impacts to the school district and to county roads were mentioned, but the report stated that the county road system was in poor repair prior to construction of the power plant and a bond issue had been recently passed to construct two new schools and to expand others within the District (EPRI, 1982).

Impacts to Columbia River Hydroelectric Energy Production and BPA Rates

Reduced Energy Production - It is estimated that the Coyote Springs water withdrawal of 0.17 m^3/s (6 cfs) would have produced 1,000,000 kilowatt hours of electricity annually if allowed to remain in the Columbia River. Assuming the other proposed turbine generators are built and have an equivalent effect, 3,000,000 kilowatt hours of generating capability would be foregone.

Rate Impact - The average value of the lost energy production (1,000,000 kilowatt hours) is assumed to be 60 mills based on 1993 replacement costs. At this rate annual lost revenues would be $60,000. BPA would charge PGE $3-4 million annually for wheeling power from each of the two Coyote Springs units. Thus the Coyote Springs Plant would have a positive impact on rates. BPA uses the following rule of thumb to calculate the impact of expenditures and income on rates: each $100 million dollar change in annual costs or revenues will contribute one mill to BPA's rates. Neither a $60,000 reduction in revenues nor a $6-8 million increase in revenues would have a discernible effect on BPA rates.

Health and Safety Impacts - Cogeneration Plant

Air Emission Impacts to Public Health - The extent and magnitude of toxic air pollutants being released to the atmosphere from the plant were evaluated by Chester Environmental (see pages 5-15-16). Results are summarized in Tables 5-2 through 5-4. The plant would exceed the significant emission rates for NO_x, formaldehyde, a suspected human carcinogen, and ammonia, a non-carcinogenic pollutant. Pollutants exceeding the significant emission rate were modeled for ambient impact. Ambient concentrations of these pollutants pose no human health risks. Modeled ambient impacts of these pollutants are presented in Map 11.

Toxic or Hazardous Materials - A variety of toxic or hazardous materials will be used at the Coyote Springs Plant. A SPCC Plan will be prepared 90 days prior to beginning operation of the plant (PGE, 1994). The following hazardous wastes are expected to be produced from the project:

- Used lead acid batteries
- Spent Selective Catalytic Reduction (SCR) Catalyst
- Oily rags, oil absorbent materials
- Used hydraulic fluids
- Boiler cleaning waste
- Waste oil

Used batteries and spent SCR catalyst are only produced when the equipment has served its useful life and requires replacement. Batteries are used as a source of backup power for plant system controls and safety-related equipment functions. Typical battery life is expected to range from 10-15 years. Used batteries would be shipped to vendor recycling facilities for recycling to minimize the final amount of waste materials requiring disposal at a hazardous waste disposal site.

SCR catalytic systems are used to convert NO_x in the gas turbine exhaust into nitrogen and water vapor. The catalyst system contains heavy metals that are considered hazardous materials. SCR catalysts would be shipped to a hazardous waste disposal facility. The amount of waste catalyst materials generated would be minimized by using clean-burning natural gas and through proper operation and maintenance of system components.

Oily rags and oil absorbent materials would be generated if and when oil spills occur. The plant would be operated and maintained according to rigid written operations and maintenance procedures by qualified and properly trained personnel, which would minimize the potential for oil material spills.

Relatively small quantities of used hydraulic fluids (less than 19 liters [5 gal.] per day) occur on an intermittent basis from routine maintenance and operation functions. These would be stored on-site for periods less than 90 days and periodically shipped to an oil recycling facility.

Following mechanical installation of the boilers, they would be chemically cleaned internally prior to start-up. The cleaning solution would dissolve metallic and other debris created during construction. Boiler cleaning waste would be classified as hazardous. The estimated 152 m^3 (40,000 gal.) of waste solution would be shipped off-site to a hazardous waste disposal facility. This is a one-time waste stream associated with boiler construction.

Waste oil would be generated at the facility from various equipment and plant operations. Sources of waste oil include turbine lube oil system waste oil (oil changes at major overhaul maintenance periods), drains from the natural gas knockout drums, and plant oil/water separators (equipment drains). Only a small amount of waste oil is produced at the plant. Most waste oil comes from maintenance oil changes from the gas turbine and steam turbine generators. Waste oil would be collected in a single underground 23 m^3 (6,000 gal.) storage tank. This size tank would hold a complete lube oil system drained from one of the gas turbine generators. The waste oil would be pumped out by tank truck and trucked off-site to an approved recycling and disposal facility. The underground tank would be of fiberglass double-wall construction to provide corrosion protection and secondary containment. Leakage monitoring would also be provided. (See Tables 3-2 and 3-3 for materials used and stored on-site.)

Electric or Magnetic Fields - The proposed plant would produce some levels of electric and magnetic fields within the plant. Workers in that plant would be exposed to these fields during the course of performing their jobs. Exposure and level duration are unknown.

Because scientific evidence about EMF has not established a cause-and-effect relationship between electric or magnetic fields and adverse health effects, specific health risks, or specific potential level of disease related to exposure to EMF are unknown.

Electric and magnetic field effects are discussed at length under the transmission line impacts discussion on Page 5-38 and in Appendix B.

Visual and Aesthetic Impacts - Cogeneration Plant

Section 4.1.6 discussed the project, impact area visual characteristics, land use designations (visually sensitive), and viewers potentially exposed (see Table 4-7). The following discussion identifies the compatibility or impact of the proposed cogeneration plan with these characteristics. Visual impact findings are based on a field evaluation of visually sensitive sites, and computer-assisted viewshed analysis. Table 5-8 identifies the distance from which the project is seen and the significance of visual impact. Map 9 illustrates the sensitive viewer observation areas which are located in the viewshed . Unless views are blocked by vegetation all areas in the viewshed would see at least part of the project.

The significance of impact (high, moderate, low or none) was determined based on the sensitivity of viewing activity, the degree of visibility (distance), the significance of the viewing area (designated, protected) and the number or type of viewers. The analysis was based on the visibility of the most significant elements of the project, the main turbine built and emissions stacks and transmission towers. The analysis was completed based on the assumption that strobe lights would be put on the stacks to meet FAA requirements.

The methodology used for determining impact significance was interpreted from the threshold distances proposed to BPA in the 1976 study *Measuring the Visibility of H.V. Transmission Facilities in the Pacific Northwest* and the *1986 Cape Blanco Wind Farm Feasibility Study Technical Report No. 7 - Visual.* The thresholds distances used were:

High to Moderate Visibility - 2.2 km (1.4 miles) or less
Moderate to Low Visibility - 2.2 - 6.2 km (1.4 to 3.9 miles)
Low Visibility - 6.2 km - 30 km (3.9 to 18.9 miles)

With the exception of the Columbia River, Lake Umatilla, portions of the Umatilla Wildlife Refuge, I-84, nearby residences and Port work areas, Washington State Highway 14, and the Coyote Springs State Wildlife Refuge, the proposed plant would not be visible or would have only low impact significance on any of the key observation areas identified on Table 5-6 and Map 9. The predominant visual features of the facility would be the 55 m and 64 m (180 ft. and 210 ft.) exhaust stacks, associated steam plumes and the new 500-kV transmission towers. On clear days the stacks and transmission towers could be visible from distances as far as 30.6 km (19 miles). However, their visual impact is reduced in significance by the flat terrain surrounding the site and the large number of trees (Russian olive and cottonwood) in the adjacent area. These trees obstruct views from many of the viewer observation areas. The visual impact is also reduced in significance by the many industrial and transmission structures in the area. In particular, the Boardman Chipping Company facility is a visually dominate feature and tends to attract viewer attention.

Table 5-6
Visual Impact Assessment

Viewer Observation Areas	View Distance	Visible (yes/no)	Designation in Land Use Plan	Impact Significance
Boardman Marina Park	2.4 kilometers (1.5 miles)	Yes (partly screened)	Not Designated	Low
Boardman Research Natural Area	1.5 kilometers (.95 miles)	Yes	Protected Area	Low (partly screened)
Boardman Sailboard Beach	4.0-4.8 kilometers (2.5-3.0 miles)	Yes	Not Designated	Low
Cold Springs Reservoir	38.6 kilometers (24 miles)	No	Designated	None
Cold Springs National Wildlife Refuge	38.6 kilometers (24 miles)	No	Protected Area	None
Horn Butte BLM Area of Critical Environmental Concern	28 kilometers (17.4 miles)	Yes	BLM Designated and Protected Area	Low
Coyote Springs State Wildlife Area	2.9 kilometers (1.8 miles)	Yes	Not Designated but Protected Area	Moderate
Hat Rock State Park	38.5 kilometers (23.9 miles)	No	Designated and Protected Area	None
I-84 Rest Stop (east & west-bound)	6 kilometers (3.7 miles)	Yes	Not Designated	Low
Irrigon Marina Park (ODFW)	19 kilometers (11.8 miles)	No	Not Designated	None
Irrigon State Wildlife Area	19 kilometers (11.8 miles)	No	Not Designated or Protected	None
Lake Wallula	30.6+ kilometers (19.+ miles)	No	Designated	None
Lake Umatilla	.5+ kilometers (.3+ miles)	Yes	Designated	Moderate-Low
Lindsay Grassland	16 kilometers (10 miles)	No	Designated	None
McNary Lock and Dam	30.6+ kilometers (19+ miles)	No	Designated	None
Messner Pond	0.1 kilometers (400 feet)	Yes	Not Designated	Moderate
Oregon Trail BLM Area of Critical Environmental Concern (Bucks Corner)	29 kilometers (18 miles)	Yes	BLM Designated and Protected Area	Low (can see only stack and steam plume)
Power City Wildlife Area	30.9 kilometers (19.2 miles)	No	Not Designated or Protected	None
Riverside High School	1.6 kilometers (1 mile)	Yes (only stack and plume visible)	Not Designated	Low
Travelers on I-84	0.9+ kilometers (.55+ miles)	Yes	Not Designated	High
Umatilla County Scenic-Historic Road	30+ kilometers (18+ miles)	Yes (only stack and plume visible)	Designated	Low-None
Umatilla National Wildlife Refuge	2.4-3.2 kilometers (1.5-2.0 miles)	Yes	Protected Area	Moderate-Low

During certain times of the year when the relative humidity is high, steam plumes may be visible from the cooling tower, HRSG stack, and auxiliary boiler stack. Plumes would be 107-122 m (350-400 ft.) high. Since the proposed facility is in a semi-arid area, the ambient relative humidity is generally low and plumes would only be visible when temperatures fall below freezing. Plumes would be seen until the temperature of the plume declines to the ambient air temperature.

The views of the facility are particularly open from the Columbia River, and the Washington shoreline. There are several scenic viewpoints, boat ramps and wildlife refuge access roads on the Washington side of the river. They would expose viewers to an open panorama of the site. This views across the river and Umatilla Wildlife Refuge would be the most incompatible. The proposed facility would increase the industrial appearance of the wildlife refuge's natural vistas. However, this impact would be somewhat reduced due to the views of the Boardman Coal Plant and stack, which are visible in the background. The plant site would also be highly visible from I-84. Average daily traffic on I-84, 500 m (1,600 ft.) west of the Boardman interchange, totals over 9,450 vehicles a day (1991). The unimproved appearance of the Port property would be accented by the new plant and associated transmission lines. This could leave a negative visual impression to the public traveling on I-84. The exhaust stacks and steam plumes would attract attention and be highly visible.

Figures 4-4, 4-6, and 4-8 (see Section 4) are simulations of what the plant would look like from key vantage points. These photographs were included in PGE's site application and were taken from I-84 south, east, and west of the proposed site. The view from the Boardman residential area should be similar to the views shown on Figures 4-6 and 4-7.

Mitigation - PGE indicated that topographic screening was not practical due to the flat terrain surrounding the site. PGE's conclusions were based on topography or vegetation not being strong visual elements in the site area. However, PGE has proposed several mitigation measures to be used to minimize the visual impact of the plant:

- Paint buildings and exhaust stacks in neutral shades to minimize visual impacts.
- Minimize exterior lighting at night. The minimum number of lights would be used as required by safety standards. The FAA may require aircraft warning lights on the tallest stacks. There is no way to minimize the visual impacts of strobe lights.
- Use native plant materials to enhance the appearance of the site.

Noise Impacts - Cogeneration Plant

Operational Noise - Future noise levels for the plant were calculated by Chester Environmental using a widely used and accepted acoustic computer program called "Noisecalc." Future noise was then compared with DEQ's nighttime standard of 50 dBA for residential sites and with existing noise levels at these sites. DEQ's industrial noise standard takes into consideration existing noise levels at industrial sites when evaluating future industrial noise. Its standard is

either the maximum existing noise level or the speech interference criteria of 55 dBA. The results of the noise analysis are presented in Table 5-7. Locations of noise recordings are shown on Map 4 (follows page 4-2).

As Table 5-7 shows, DEQ noise standards are met at each of the noise analysis sites. Several of the noise analysis sites (2,4, and 5) already experience high noise levels. The cogeneration plant would not worsen this condition. It would be possible to hear the turbine generators' high frequency tonal sound at some of the nearest occupied sites. During east to northeast wind conditions, some locations may experience downwind refraction of sound causing short-term noise increases of up to 10 dBA.

Table 5-7
Future Nighttime Noise Levels

Site	Site Type	Existing Noise (L-10)	Predicted Noise (L-10)	DEQ Standard (L-10)
1	Wildlife Area	51 dBA	57 dBA	62 dBA
2	Industrial Site	51 dBA	44 dBA	55 dBA
3	Residential	50 dBA	39 dBA	55 dBA
4	Industrial Site	56 dBA	41 dBA	55 dBA
5	Residential	57 dBA	31 dBA	50 dBA
6	Residential	50 dBA	30 dBA	55 dBA
		Existing Noise (L-50)	**Predicted Noise (L-50)**	**DEQ Standard (L-50)**
1	Wildlife Area	36 dBA	57 dBA	62 dBA
2	Industrial Site	46 dBA	44 dBA	50 dBA
3	Residential	44 dBA	39dBA	50 dBA
4	Industrial Site	50 dBA	41 dBA	50 dBA
5	Residential	56 dBA	30 dBA	50 dBA
6	Residential	48 dBA	30 dBA	50 dBA

Source: Chester Environmental.

Construction Noise - The exact mix of construction equipment to be used at the plant is unknown. However, experience suggests that certain types of equipment would be used for this type of facility. Table 5-8 lists construction equipment expected to be used to build the plant and the noise levels created by each. The number of each machine used is based on EPA estimates. The usage factor is an estimate of how much time a piece of equipment would be used in an 8-hour work day (expressed as a percentage).

Table 5-8
Construction Equipment Noise Levels

Equipment Type	Quantity	Noise at 50 ft. (dBA)	Usage %
Bulldozer	2	80	40
Road Grader	1	78	40
Back Hoe	1	85	20
Crane	1	84	20
Dump Truck	3	85	40
Paving Machine	1	85	10
Paving Roller	1	85	10
Concrete Truck	2	86	20
Air Compressor	2	81	100
Water Pump	2	76	100

Based on the equipment noise levels at 15 m (50 ft.) and the individual usage factor, a composite noise level at 15 m (50 ft.) of 89 dBA (L_{50}) was calculated by Chester Environmental. This noise level would occur up to 4 hours. Taking into account noise reduction due to distance, noise at Messner Pond (the nearest sensitive site), would be 65 dBA, which is less than DEQ's allowable noise maximum of 68 dBA. Construction noise at the nearest residential site (Site 5) would be under the existing industrial ambient noise, and would be inaudible at Site 3.

Cultural Resource Impacts - Cogeneration Plant

The proposed plant would not be on or within any known historic, cultural, and/or archeological resources. However, site-specific surveys have been performed to check for the presence of historic, cultural, and archeological resources, and provide for any needed protection, recovery, or avoidance. A draft of the survey report is included in PGE's *Application for Site Certificate*.

Protected Resource Impacts - Cogeneration Plant

No impacts to other protected resources are anticipated from the proposed project. The City of Boardman has defined a wellhead protection zone and is developing an Ordinance designed to regulate land use development to protect their drinking water supply. The City of Boardman is confident that PGE will protect the wellhead area.

5.1.2 Power Integration Impacts

Impacts predicted to occur from power integration facilities are summarized in Table 5-9. Narrative descriptions of predicted impacts are provided below.

Land Use Impacts - Power Integration

Construction of the proposed transmission line would alter the land use within the right-of-way from vacant and agricultural to industrial. The proposed transmission line has been sited on land that has been zoned PI (Port Industrial) and MG (General Industrial). Transmission lines are an allowed use in the PI Zone within Morrow County, however, they are not allowed outright in the MG Zone. To site a transmission line in the MG Zone within Morrow County, PGE first needs to obtain a variance from the County to allow this use. The County Planning Department would process the permit quickly once it is received (Seeger, 1993).

The transmission line would parallel the Port access road as it enters/exists the proposed plant over approximately 900 m (1,000 yards). The transmission line would then pass over Columbia Avenue before turning southeast for approximately the same distance before tapping into the existing McNary-Slatt 500-kV transmission line. The applicant would need to obtain a conditional use permit from the county before stringing a transmission line over a public right-of-way. The conditional use permit would specify the minimum clearances required for such use.

Land use restrictions are necessary for land contained within transmission line rights-of-way. Such restrictions would be contained in the easement between PGE and BPA and the Port of Morrow. These restrictions would identify what uses are not allowed within the right-of-way. For example, no structures may be built and no flammable liquids may be stored within a BPA transmission line right-of-way.

Construction of the proposed transmission line across the irrigated agricultural field (circle 53) may cause noxious weeds to spread within the existing field and/or within nearby fields.

Mitigation - PGE would obtain a variance from the county to allow construction of the proposed transmission line in the MG Zone.

PGE would obtain a conditional use permit from the county before stringing a transmission line across Columbia Avenue, a public right-of-way.

PGE would acquire the appropriate easement rights (meeting all BPA easement requirements) from the landowner prior to construction. PGE would assign these rights to BPA.

Noxious weed survey would be undertaken by a qualified individual(s) prior to any earth moving activities taking place.

Natural Resource Impacts - Power Integration

Soils and Geology - Minimal impacts to soils are expected from construction of the substation and tap lines. Determination of soil impacts are based on soil characteristics, topography, vegetation, and presence of erosion elements including water and wind. The proposed project site is nearly flat, dry, and sparsely vegetated. Water erosion is expected to be minimal. Vegetation must be replaced to avoid wind erosion.

Transmission towers would be supported on drilled shaft foundations and the substation equipment would be supported on spread footing foundations. Operating the transmission line and substation would have no impact on site stability.

Water - The substation and transmission line structure locations avoid surface water features. The construction period would be the only period in which water impacts might be caused by power integration facilities. Oregon requires SWPP Plans for construction sites that exceed 2 ha (5 acres), such as the Coyote Springs Plant. This plan would define techniques that would be used to prevent pollution from entering aquatic systems, and prevent wind or water erosion, and ensure that transmission facilities would not adversely affect water resources.

Air Quality - The typically high electric field strength of 500-kV transmission lines causes a breakdown of air at the surface of the conductors called corona. Corona has a popping sound, which is most easily heard during rain storms. When corona occurs, small amounts of ozone and NO_x gases are released. These substances are released in such small quantities that they are generally too small to be measured or to have any significant effects on humans, plants or animals.

Impact Table - Coyote Springs Power Integration (Substation and Transmission Line)

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
WATER				
Resulting from Construction Activities				
Messner Pond	Unlikely	None	NPDES Requirements	DEQ 1200 C
Columbia River	Unlikely	None	NPDES Requirements	DEQ 1200 C
Unnamed irrigation pond	Certain	Slight	NPDES Requirements	DEQ 1200 C
Resulting from Facility Operation				
Degradation of water quality	Unlikely	Slight	City of Boardman's sewa treatment facility	None
Lowering of water table in d aquifer	Possible	Slight	None	(Water Resourc Permit)
Spills of fuel or other hazard materials	Unlikely	Slight	Fulfill requirements of RCRA	None
Fisheries	Unlikely	Slight	Denial of new wells ir alluvial aquifer	Water Resource Permit
VEGETATION				
Habitat disturbance	Slight	None	Recontouring and revegetation	None
Wetland vegetation disturbance	Likely	Moderate	Recontouring and Revegetation	None
Sensitive plant species	Unlikely	Unlikely	None	None
WILDLIFE				
Fauna				
Mortality of individuals	Unlikely	Localized	None	None
Temporary displacement	Unlikely	Localized	None	None
Stress in crucial life cycle times	Unlikely	Localized	None	None
Wildlife Habitat				
Wildlife habitat impact	Minimal	Localized	Revegetation	None
FISH				
Mortality/displacement	Unlikely	Localized	None	None
SPECIAL STATUS SPECIES				
None found in project area	None	None	None	None
THREATENED AND ENDANGERED SPECIES (Federally listed)				
Plants				
None found in project area	None	None	None	None

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
THREATENED AND ENDANGERED SPECIES (Federally listed) Cont.				
Wildlife				
Peregrine falcon	Unlikely	Localized durir construction	None	None
Bald eagle	Unlikely	Localized durir construction	None	None
Fish				
Salmon River fall chinook salmon	None	None	None	None
Salmon River spring/summe chinook salmon	None	None	None	None
Salmon River sockeye salmon	None	None	None	None
GEOLOGIC HAZARDS				
Seismic Hazards (Possibilities ground shaking, fault offset, liquefaction, or seismicall induced waves and flooding cc affect the integrity of the f	Possible	Project Area	Construct facilities acc to the Uniform Buildin Code, and the appropriat importance factor for essential and hazardous facilities.	Building Perm
Floodplains	Unlikely	Slight	None	None
SOIL				
Wind erosion due to removal vegetation	Likely	Localized, sho term	NPDES Requirements	DEQ 1200 C
Water erosion due to removal vegetation	Unlikely	Localized, sho term	NPDES Requirements	DEQ 1200 C
LAND USE				
Land use within the right-of will be altered from vacant agricultural to industrial u	Certain	Slight	None	None
Transmission lines in the Ger Industrial zone of Morrow Cou require a variance.	Certain	Localized	Project developers will a variance..	Variance
The transmission line will cro public right-of-way.	Certain	Localized	As required in permit	Conditional Us Permit
The transmission line will r certain uses within the righ way.	Certain	Localized	Landowners will be compensated for easeme	None

Table 5-9
Impact Table - Coyote Springs Power Integration (Substation and Transmission Line)

Impact Table - Coyote Springs Power Integration (Substation and Transmission Line)

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
LAND USE (Cont.)				
Construction of the transmis line may cause an infestation noxious weeds in existing nea agricultural fields.	Likely	Localized	A noxious weed survey be conducted by a qualifi individual(s) prior to a construction activities t place. All constructio vehicles will be washe prior to entering and bef leaving construction are	None
CULTURAL RESOURCES				
Historic, cultural and archeol resources	Unlikely	None	Site-specific survey	None
SOCIOECONOMIC				
Construction of proposed pro will increase the demand fo temporary housing.	Likely	Local area	None	None
Construction and operation proposed project will increa employment in local area.	Likely	Local area	None-Positive impact	None
RECREATION				
Local recreation sites	Unlikely	None	None	None
VISUAL AND AESTHETIC RESOURCES				
Nearby residences, Washingto Highway 14, I-84, Columbia R portions of the Umatilla Wi Refuge, and the Coyote Spring State Wildlife Refuge.	Likely	Low	Structures will be loca parallel to existing stru if possible. Insulator a tower colors will be mat between lines, etc. Measures will be used t reduce visibility and glar new conductors and towe	None
Other key observation points	Unlikely	Slight	(1) Paint buildings in ne shades to minimize visu impacts. (2) Minimize t amount of exterior lightir night. (3) Use native mat landscaping.	None
PROTECTED RESOURCES				
Oregon DOE designated Protected Resources	Unlikely	Slight	None	None
PUBLIC HEALTH AND SAFETY				
Toxic and hazardous waste (Substation)	Unlikely	Localized	Requirements of SPCC Pl pursuant to the Clean Wa Act	None
Electric fields	Likely	Localized	Safety standards to pre accidental shock.	None
Magnetic fields	Likely	Unknown	Line design to reduce fields.	None

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
NOISE				
Construction noise	Likely	Moderate, Short-term	None	None
Operation noise (line and substation)	Likely	Localized, insignificant d to existing noi	Special design of transmission lines anc transformers to meet n standards.	None
AIR QUALITY				
Pollutants from constructi equipment	Likely	Slight	None	None
Pollutants released during operation	Likely	Slight	None	None
Fugitive dust	Likely	Slight	Water area as needed.	None

Table 5-9 (continued)
Impact Table - Coyote Springs Power Integration (Substation and Transmission Line)

Fish and Wildlife Impacts - Power Integration

Fisheries - No fisheries impacts would occur from construction of the electrical transmission line.

Wildlife - Along the electrical transmission line corridor, temporary impacts to wildlife habitat would result from equipment operation to access the transmission tower construction sites, and minimal permanent loss of habitat would occur at the base of the transmission towers. The effect of this habitat loss on wildlife populations is expected to be minor due to the temporary nature of the impact and the small amount of habitat impacted. No excavation would occur except to construct the footings for the transmission towers. Minor amounts of vegetation would be cleared because most of the electrical transmission line route lacks significant vegetation. The proposed mitigation measure to reestablish vegetation (grasses) would provide habitat in areas presently bare. Also, the erection of the transmission towers may provide new perching and nesting habitat for some avian species (e.g., raptors, western kingbird).

Construction activities along the transmission line could also cause disturbance (visual and auditory) and displacement of wildlife from these areas to adjacent areas. Displacement would be temporary and most wildlife would likely return to the area after construction is complete. The degree of this disturbance would depend on several factors including time of year, duration of disturbance, and the species' sensitivity to disturbance.

Mitigation - Electrocution of raptors is unlikely based on the design specifications of the transmission towers, but modifications would be added if warranted to raptor-proof the transmission towers and minimize electrocutions. Because phase-to-phase and phase-to-ground distances of the 500-kV transmission lines and towers are greater than the wing span of eagles and other large birds, electrocution of these species would not be a concern. If, for some unforeseen reason, an individual tower is determined to be a potential hazard, appropriate mitigation measures would be taken (erection of perch guards or modification of the lines as described in Olendorf, et al., 1981) to eliminate the hazard.

Vegetation/Wetland Impacts - Power Integration

Direct but short-term impacts would occur to upland vegetation during construction of the towers.

Socioeconomic Impacts - Power Integration

Socioeconomic impacts for the power integration facilities are minor and cogeneration plant impacts include power integration facilities.

Public Health and Safety Impacts - Power Integration

Toxic and Hazardous Materials - Minimal amounts of hazardous waste would be generated from routine maintenance procedures performed on substation equipment and lines. Kinds and volume of waste would depend on the maintenance procedure and would be the same as that generated at any electrical substation.

Safety Precautions - Power lines, like electrical wiring, can cause serious electric shocks if certain precautions are not taken. These precautions include building the lines to minimize shock hazard. All BPA lines are designed and constructed in accordance with the ***National Electrical Safety Code (NESC)***. NESC specifies the minimum allowable distances between the lines and the ground or other objects. These requirements determine the edge of the right-of-way and the height of the line, that is, the closest point that houses, other buildings, and vehicles are allowed to the line, to limit electric field effects to acceptable levels.

People must also take certain precautions when working or playing near power lines. It is extremely important that a person not bring anything, such as a TV antenna or irrigation pipe, too close to the lines. BPA provides a free booklet that describes safety precautions for people who live or work near transmission lines (*Living and Working Around High Voltage Power Lines*).

Transmission lines can also induce voltages into objects near the lines. This effect can lead to nuisance shocks if a voltage is induced on something like wire fencing on wood posts insulated from ground. Usually this becomes a problem only with lines of voltages above 230-kV. Should problems develop with either high- or low-voltage lines, they can be corrected by simple grounding techniques. For 500-kV lines, grounding of certain objects near the lines is a routine part of the construction process.

Audible Noise Limits - All new BPA lines are designed and constructed to comply with state noise regulations. The new transmission line would meet Oregon's noise standard, 50 dBA.

Electric and Magnetic Fields - BPA recognizes public concern regarding the possible effects of the electrical properties of transmission lines on public health and safety. These effects include electric shocks, noise and potential long-term health effects. In response to the public concern regarding EMF, BPA has taken these steps:

- Developed Interim Guidelines of EMF. These guidelines name EMF as a major decision factor to be considered in locating and designing new BPA facilities.

- Discouragement of intensive uses of rights-of-way. In 1990, BPA revised its right-of-way management practice. BPA no longer encourages new uses in rights-of-way that would increase human exposure to EMF.

- Exposure Mitigation. BPA was among the first to voluntarily adopt practices to mitigate EMF exposures. This means taking reasonable or practical actions that would keep human exposure to new sources of EMF as low as reasonably available.

All BPA lines and electrical facilities are designed and constructed in accordance with the NESC to minimize electrical shock hazards. New BPA lines are also designed and constructed to comply with Oregon's electric field strength standard of 9 kV/m maximum on the right-of-way. This project would meet this standard.

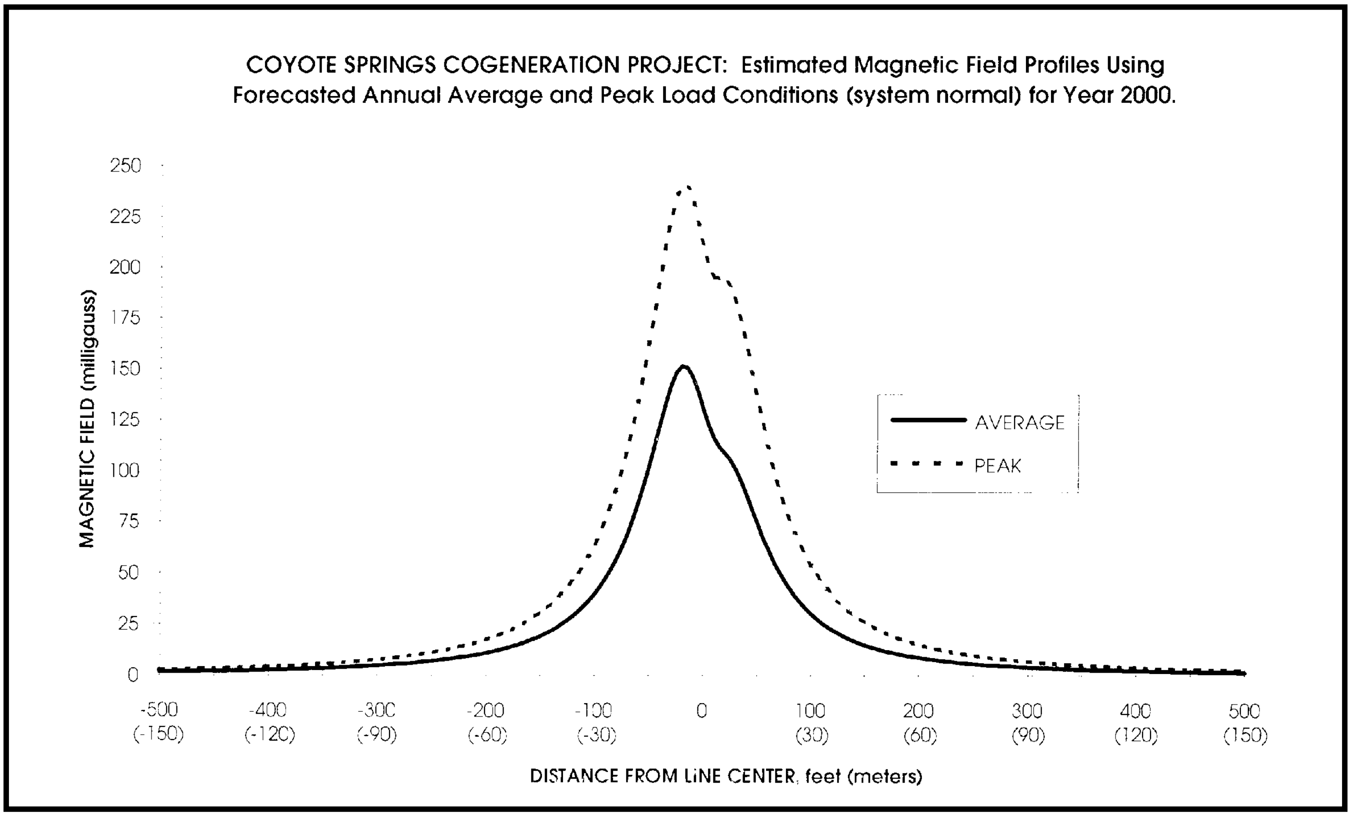
Both electric and magnetic alternating-current (AC) fields induce currents in conducting objects, including people and animals. These currents, even from the largest power lines, are too weak to be felt. However, some scientists believe these currents might be potentially harmful and that long-term exposure should be minimized. Hundreds of studies on electric and magnetic fields have been conducted in the U.S. and other countries. Studies of laboratory animals generally show that these fields have no obvious harmful effects. However, a number of subtle effects of unknown biological significance have been reported in some laboratory studies (Frey, 1993).

Much attention at present is focused on several recent reports suggesting that workers in certain electrical occupations and people living close to power lines have an increased risk of leukemia and other cancers (Sagan, 1991; National Radiological Protection Board, 1992; Oak Ridge Associated Universities Panel, 1992; and Stone, 1992). Most scientific reviews, however, find that the overall evidence is too weak to establish a cause-and-effect relationship between electric or magnetic fields and cancer. For this reason specific health risks related to exposure to EMF are unknown. A review of some of the studies relating to EMF and possible biological and health effects are included in Appendix B.

Significance of EMF Exposures - Adverse health effects, specific health risks, or specific potential levels of disease related to exposure to EMF are unknown. BPA conducts *exposure assessments* of magnetic fields from transmission lines. Exposure assessments are estimates of the field levels that people are potentially exposed to.

Exposure Assessment - In general, magnetic field exposure assessments are performed by calculating field levels in locations where there are potential long-term exposures to people. This is usually done by assessing the number of homes, schools or businesses near the proposed project where magnetic field exposures may be created by the proposed project. Estimated magnetic fields along the proposed transmission line are provided in Figure 5-1. Figure 5-1 shows that magnetic fields drop rapidly as distance from the transmission line increases.

Figure 5-1
EMF Exposure Assessment



The proposed transmission line is within the Port of Morrow Industrial Park, thus EMF exposure to people would be limited. There is only one building employing or housing people close enough to the transmission corridor to potentially experience an increase in magnetic field exposure. The onion processing plant is about 130 m (425-450 ft.) from the centerline of the new transmission line. As Figure 5-1 indicates, this building is estimated to experience 2-3 milligauss magnetic field exposure from the new transmission line. The onion processing plant may already receive some magnetic field exposure from the existing 115-kV line along the Port access road. There are two mobile homes in the area owned by the Port that would be removed. Also, two buildings associated with the concrete batch plant are scheduled for removal because the plant is moving to a new location.

Electrical current levels and EMF exposure levels along other parts of the transmission system may be affected because of this project. Increases or decreases to the magnetic field environment may occur in some areas along the transmission system.

Visual and Aesthetic Impacts - Power Integration

Section 4.1.6 discussed the project, impact area visual characteristics, land use designations (visually sensitive), and viewers potentially exposed. The following discussion identifies the compatibility or impact of the proposed transmission line and tap with these characteristics. Table 5-8 identifies the sensitive observation areas that can see the project (plant facilities and transmission), the distance, and the degree of significance of the visual impact. Figure 5-2 simulates the appearance of the new transmission line as viewed from I-84.

The significance of impact has been determined based on the sensitivity of viewing activity, the degree of visibility (distance), the significance of the viewing area (designated, protected), and the number or type of viewers. The analysis was based on the visibility of the most significant elements of the project, the transmission towers and plant substation. Because of the existing impact and visual dominance of the existing transmission corridors and Boardman Substation, the increased visual impact on viewers or sensitive observation areas beyond 6.3 km (3.9 miles) would be minimal.

The visual impacts of the transmission facilities would occur primarily to the near views. These impacts would occur to people using the Columbia River, portions of the Umatilla Wildlife Refuge, I-84, nearby residences and Port work areas, Messner Pond, Washington Highway 14, and the Coyote Springs State Wildlife Refuge. The proposed transmission line would not be visible or have only low impact significance on any of the key observation areas identified on Table 5-6. The dominant transmission visual features would be the new 500-kV transmission towers and the tap structure that would be within 0.4 km (1/4 mile) of I-84. The proposed transmission line alignment would cross over a vegetated portion of the Messner Pond natural area. Russian olive trees that would be crossed may require clearing, which would increase the visual impact of the project.

Mitigation - Topographic screening is not practical due to the height of the transmission structure and the flat terrain surrounding the site. BPA would use the following measures to minimize the visual impacts of transmission lines structures built for the plan proposed.

- Transmission structures for parallel lines would be designed and located to provide uniformity to the extent practical. That is, structures would be parallel to existing structures. Insulator colors would be matched between existing and new lines.

- The galvanized transmission towers would be specially treated to reduce reflectance and match the existing weatherized transmission towers.

- ***Non-specular*** conductors could be used to reduce visibility between the existing transmission corridor and the generation plant.

- The substation and tap installations would be designed to be aesthetically pleasing. The substation would be landscaped with native plant materials. Substation structures would be painted in a color compatible with the surrounding area.

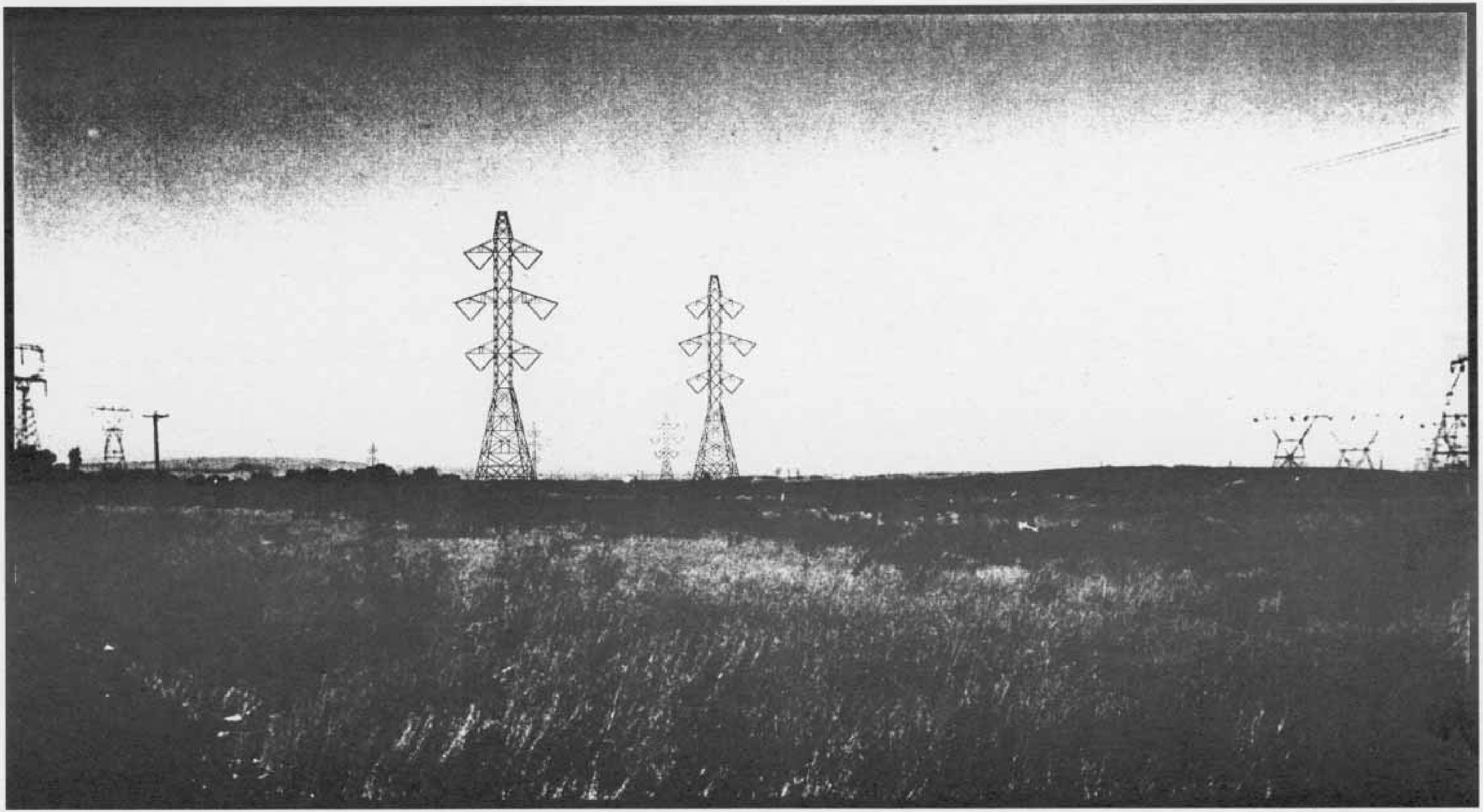


Figure 5-2
Transmission Tap and
Loop Line Simulation

Coyote Springs Cogeneration Plant - Morrow County, Oregon

Noise Impacts - Power Integration

Power transformers within the Coyote Springs substation switchyard would create noise. While old power transformers at times exceed nighttime noise standards, modern transformers are designed to meet the most stringent noise standards.

Transmission lines also create noise through a process called corona activity. An audible popping sound occurs when air breaks down due to the high fields on the surface of the transmission line conductors. During fair weather, 500-kV lines typically create noise levels below normal background (ambient) at the edge of the right-of-way. During heavy precipitation noise levels increase. The use of conductor bundles (2-4 conductors/phase) has considerably reduced transmission line noise levels. A three conductor/phase design will be used for the proposed loop line.

Considering that no noise sensitive properties are near the transmission line route, no significant noise impacts would result from power integration. The proposed transmission loop line will meet the Oregon noise standard in both fair and foul weather conditions.

Cultural Resource Impacts - Power Integration

The proposed 500-kV transmission line and substation would not be on or within any known historic, cultural, and/or archeological resources. Site-specific surveys have been performed to check for the presence of historic, cultural, and archeological resources, and provide for any needed protection, recovery, or avoidance. (See Section 4.1.7.)

Should any archeological, historical, or cultural resources be encountered during construction or operation of the proposed facilities, both ORS 358.920 and 36 CFR 800.11 apply. The former statute prohibits the disturbance or excavation of an archeological site on public lands (including lands owned by port districts) without a permit issued by the state under ORS 390.235. The latter regulation addresses procedures in the event of cultural resource finds made during the course of Federally permitted or licensed undertakings. In pursuant of these legal authorities, if any cultural resource discoveries are made during development or operation of Coyote Springs facilities, all ground-disturbing activity in the vicinity of the find would be halted immediately and the following agencies notified: the Oregon State Historic Preservation Office, FERC, and the Confederated Tribes of the Umatilla Indian Reservation.

ORS 97.745 prohibits the disturbance or removal of Indian burials or graves, whether on public or private lands. Should an Indian burial or possible burials be encountered during construction or operations of the Coyote Springs facilities, all ground-disturbing activity in the vicinity would cease immediately and the following agencies notified: the Oregon State Historic Preservation Office, the Oregon Commission on Indian Services, and the Confederated Tribes of the Umatilla Indian Reservation.

Protected Resource Impacts - Power Integration

Construction and operation of the transmission line is not expected to have a significant adverse impact to Protected Resources. The proposed 500-kV electrical transmission line is about 3.7 km (2.3 miles) from the McCormack unit of the Umatilla National Wildlife Refuge and 1 km (0.6 mile) from the Coyote Springs Wildlife Area.

5.1.3 Coyote Springs Extension Pipeline Impacts

Public distribution of an Environmental Assessment (EA) on PGT's proposed Coyote Springs and Medford Lateral pipelines is planned for released by FERC in the fall of 1994. Impacts reported here and in Table 5-10 are taken from environmental resource reports commissioned by PGT for submittal to FERC in Docket No. CP93-618-000 and CP93-618-001.

Land Use Impacts - Pipeline

Since most of the proposed route is located within or adjacent to existing, previously disturbed right-of-way, construction effects for the pipeline on land use should be minor and insignificant. Traffic along Bombing Range Road will be disrupted by interruptions for short periods due primarily to the precautions for safe movement of equipment or pipe. The crossings of Interstate I-84 and Wilson Road will be bored because of high traffic volumes and requirements by Morrow County Public Works and Oregon Department of Transportation. Traffic will not be disrupted. The West Extension Irrigation Canal would be bored to avoid interruption of water flow.

Minor short-term inconveniences may occur to some property owners because of construction activities. Access to homes and business will be provided at all times. All landowners will be compensated for unforeseen damage to property.

Mitigation - Special safety precautions and traffic control would be implemented during construction along Bombing Range Road. PGT would inspect and maintain the pipeline for the life of the project.

Natural Resource Impacts - Pipeline

Geology

Impacts on geology would be minor and insignificant, and would only occur during grading and excavation of the pipeline trench. With the nearest known fault miles away, seismic ground shaking is not expected to strain the earth surrounding the pipeline. It is possible that shaking could affect the integrity of the pipeline, however welded steel pipelines have good inherent ductility, and potential damage is not probable.

Potential effects to soil could include loss of topsoil, mixing of topsoil and subsoil, compaction, and wind or water erosion. Since the majority of the route is located in existing utility or transportation corridors which are not on lands used for agriculture, the effects would be minimal.

Mitigation - PGT will follow FERC's "Erosion Control, Revegetation, and Maintenance Measures" guidelines. Preconstruction contours will be reestablished to minimize erosion. Topsoil stockpiled during construction will be replaced last. Disturbed areas will be stabilized. The working area will be reseeded during the final cleanup phase of construction, unless property owners prefer otherwise.

Air Quality

Effects on air quality from construction of the pipeline would be temporary, and are not expected to exceed any air quality standards. Dust created as a result of vegetation clearing and disturbances by construction equipment would be minor. No impacts are expected after construction.

Mitigation - Watering of the working area during construction would control dust levels, and revegetating the exposed soil after project completion would provide final stabilization.

Vegetation

Throughout the 30 km (18.5 mile) pipeline route, agriculture and road/utility line maintenance operations have virtually eliminated all tracts of native vegetation. Existing vegetation communities along the route will be disturbed by the construction activities. Disturbance will be limited to the construction period, and will be restricted to within 10 m (35 ft.) or less of the pipeline centerline. Vegetation disturbed will largely consist of disturbed weedy grassland and grazed grassland communities. These impacts are not considered significant as these vegetation communities are common in the area, and are already highly disturbed. No protected sensitive plant species were identified during field surveys along the route.

Mitigation - In spring 1994, plant surveys were repeated because part of the pipeline route has been shifted to the west side of Bombing Range Road. A revegetation plan will be developed as part of the FERC required Erosion Control, Revegetation, and Maintenance Plan. The plan will include at a minimum: plant species to be used for restoration, site preparation, timing of planting or seeding, fertilization, monitoring program, and a contingency program in case of failure. Local soil conservation authorities will be consulted in the preparation of the plan and for the identification and procedures for minimizing effects of noxious weeds.

Fish and Wildlife

No fish or threatened and endangered species are expected to be affected by the construction or operation of the pipeline.

Impact Table - Coyote Springs Pipeline Extension

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
SURFACE WATER				
Erosion of streambanks	Unlikely	Unlikely	NPDES Requirements. Follow guidelines provided by FERC's Wetland and Waterbody Construct and Mitigation Procedures	DEQ 1200 C
Increased sediment transport	Unlikely	Unlikely	(See above)	DEQ 1200 C
Resuspension of toxic contaminants	Unlikely	Unlikely	(See above)	DEQ 1200 C
Spills of fuel or other hazardous fluids	Unlikely	Unlikely	(See above)	DEQ 1200 C
WETLANDS				
Degradation of water quality	None	None	NPDES Requirements (i.e., reseedi disturbed areas, sediment filte watering to control dust, locat staging areas away from wate features, refueling 200 feet fr wetland boundaries). Also see abo	DEQ 1200 C
Chemical releases to groundwater	Unlikely	Small, localized and insignificant	(See above)	DEQ 1200 C
Fisheries and aquatic	None	None	(See above)	None
VEGETATION				
Herbaceous habitat disturbance	Likely	Short-term	Native plant restoration after construction	None
Woody shrub habitat disturbance	Likely	Long-term small acreag	Native plant restoration after construction	None
Wetland vegetation disturbance	None	None	Native plant restoration after construction	None
WILDLIFE				
Fauna				
Mortality of individuals	Likely	Less mobile, dormant species	Surveys of critical habitat, sche construction activities to avoid i	None
Temporary displacement	Likely	Mobile species	(See above)	None
Stress in crucial life cycle times	Likely	Less mobile species	(See above)	None
Wildlife Habitat				
Shrub-steppe	Likely	Conversion to grassland	Reseeding, native plant restorat after construction.	None
Grazing/agriculture	Likely	Disturbance with recover within 2 seasons	(See above)	None
Impact to grassland habitats	Likely	Temporary alteration	(See above)	None
Impact to sandy bitterbrush step habitats	Likely	Cheatgrass replacement	(See above)	None
Indirect impacts to wildlife due increased access	Likely	Slight	None	None
FISH				
None	None	None	Follow guidelines provided by FER Wetland and Waterbody Construct and Mitigation Procedures.	None

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
SPECIAL STATUS SPECIES				
Washington ground squirrel	Likely *	Mortality i occupied burrows are excavated. Loss of habit	Surveys of critical habitats, sche construction activities to avoid i	None
Burrowing owl	Likely *	Mortality i occupied burrows are excavated. Loss of habit	(See above)	None
Pygmy rabbit	Unlikely	Mortality o young or dormant rabbits	(See above)	None
Long-billed curlew	Likely *	Loss of eggs, nest abandonment	(See above)	None
Columbia cress	Unlikely	Slight	None	None
Lawrence's milkvetch	Unlikely	Moderate	None	None
Robinson's onion	Unlikely	Slight	None	None
Thompson's sandwort	Unlikely	Slight	None	None
THREATENED AND ENDANGERED SPECIES				
Plants				
None found	Unlikely	None-slight	Field Survey-Consultation with USFWS	None
Wildlife				
None found	Unlikely	None-slight	Field Survey-Consultation with USFWS	None
Fish				
None	None	None	Field Survey-Consultation with USFWS	None
CULTURAL RESOURCES				
Disturbance of prehistoric and his archeological sites during constru	Unlikely	Unlikely	Cultural resource survey prior construction, consultation with S Tribes, avoidance of identified s excavation and recording of the s avoidance impossible.	None
Destruction of standing buildings structures within the impact area pipeline route.	Unlikely	Unlikely	(See above)	None
Vandalism of sites due to increas access.	Unlikely	Unlikely	(See above)	None

* Unlikely if constructed in non-breeding season

Table 5-10 - Impact Table
Coyote Springs Pipeline Extension

Impact Table - Coyote Springs Pipeline Extension

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
SOCIOECONOMIC				
4 person-years of labor (32 short skilled craft jobs) would be hired fr local area.	Likely	Short-term employment increase	Socioeconomic effects from th pipeline project are not expected t significant. No mitigation is plar	None
12 person years of construction la (100 non-local workers) would temporarily in-migrate to work on pipeline.	Likely	Temporary population increase of 1 persons (families o workers).	(See above)	None
Loss of agricultural income within right-of-way during constructio	Likely	Small acreag impacted fo one season.	(See above)	None
Construction workers would place demand on locally available housin	Likely	52 units of temporary housing needed.	(See above)	None
Minor demands for local services (primarily the road system).	Likely	Minor impact on schools.	(See above)	None
Real property tax revenues would paid after the pipeline is comple	Likely	$181,000 annually	(See above)	None
Pipeline completion makes sever projects (including Coyote Spring Cogeneration Plant) viable.	Likely	Major-positive economic benefits	None	None
GEOLOGY/HAZARDS				
Clearing, grading, trenching, stock of excavated materials would imp topography	Likely	Minimal	Disturbed areas will be graded ar restored to approximate preconstruction conditions. Eros controls will be used at disturbed The pipe design will take into acc seismic conditions for the project	
The proposed pipeline could limit a to exploitable aggregate resourc within the pit mine it crosses	Unlikely	Minor - aggregate supplies in th area are abundant	Compensate owner for loss of income.	None
Geologic hazards could affect th integrity of the pipeline (seismic s or erosion at stream crossings)	Unlikely	Stress to the pipeline and creation of potential wea points.	See Text (No Streams are crossed)	None
SOIL				
Construction resulting in: loss vegetative cover, and topsoil; mixi topsoil with less fertile subso deposition and sedimentation of lo lying lands from increased soil ero soil compaction. Permanent loss soils/productivity.	Likely	Conversion to grassland	Follow guidelines provided by FER Erosion Control, Revegetation, ar Maintenance Plan.	None
LAND USE				
Road crossings could disrupt tra during construction.	Likely	Short-term, minor		
	Unlikely	Short-term	Utilities would be located prior construction.	None
Pipeline storage yards would disr current land uses until the pipelin complete and lands are restored to prior condition.	Unlikely	Short-term	The site selected for pipeline stor currently unused and vacant	

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
LAND USES Cont.				
Clearing and construction of the pi would disrupt current land uses.	Likely	Short-term, temporary	78% of the proposed route is adja to existing, previously disturbed of-way. Landowners would be compensated for losses. Land wo be restored to prior conditions Activities such as grazing and agriculture would resume in rig way.	
Pipeline construction, if overlapping building the power plant, could inconvenience local area resident	Likely	Short-term temporary	Construction will occur over a per about 2 months. Because the perio disruption will be short, no mitiga planned.	None
RECREATION				
The pipeline crosses the Oregon T Construction would have a short-t (about 1 day) impact on trail use	Likely	Short-term minor	Access to trail users would be pro during construction	None
People using Messner Pond for fish or birdwatching could be disrupte during construcion of the pipelin Public access would not be impact	Unlikely	Short-term, minor	None	None
PROTECTED RESOURCES				
Oregon DOE-designated Protected Resources	Unlikely	Slight	None	None
VISUAL AND AESTHETIC RESOURCES				
The pipeline passes through areas slightly altered landscapes for most length. In these areas impacts wou moderate. In the industrial park landscape is highly altered and th pipeline would have low impact.	Likely	Moderate to low	Minimizing clearing to reduce con Stockpile and replace native soils disturbed areas. Restore contours revegetate disturbed areas with n plants.	None
AIR QUALITY AND NOISE				
Air emissions (carbon monoxide, nitrogen oxides, volatile organic compounds, particulate matter and dioxide) from construction of the p would be negligible.	Minimal	Localized and slight	None	None
Fugitive dust emissions would occur result of soil exposure	Minimal	Localized	Limit right-of-way clearing. See mulch to protect soil. Water expo soil during periods of high wind. low velocity equipment.	None
Construction of the pipeline wou increase noise levels.	Likely	Localized	Work will be limited to daytime h Mufflers and quieting devices woul used when needed. Work schedulin to avoid periods of noise annoyan Install temporary or portable no barriers around stationary nois sources, if needed.	None

Table 5-10 - Impact Table (continued)
Coyote Springs Pipeline Extension

Impact Table - Coyote Springs Pipeline Extension

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
SOCIOECONOMIC				
4 person-years of labor (32 short skilled craft jobs) would be hired fr local area.	Likely	Short-term employment increase	Socioeconomic effects from th pipeline project are not expected t significant. No mitigation is plar	None
12 person years of construction la (100 non-local workers) would temporarily in-migrate to work or pipeline.	Likely	Temporary population increase of 17 persons (families of workers).	(See above)	None
Loss of agricultural income within right-of-way during constructio	Likely	Small acreage impacted fo one season.	(See above)	None
Construction workers would place demand on locally available housin	Likely	52 units of temporary housing needed.	(See above)	None
Minor demands for local services (primarily the road system).	Likely	Minor impact on schools.	(See above)	None
Real property tax revenues would paid after the pipeline is comple	Likely	$181,000 annually	(See above)	None
Pipeline completion makes sever projects (including Coyote Spring Cogeneration Plant) viable.	Likely	Major-positive economic benefits	None	None
GEOLOGY/HAZARDS				
Clearing, grading, trenching, stock of excavated materials would imp topography	Likely	Minimal	Disturbed areas will be graded ar restored to approximate preconstruction conditions. Eros controls will be used at disturbed The pipe design will take into acc seismic conditions for the project	
The proposed pipeline could limit a to exploitable aggregate resourc within the pit mine it crosses	Unlikely	Minor - aggregate supplies in th area are abundant	Compensate owner for loss of income.	None
Geologic hazards could affect th integrity of the pipeline (seismic s or erosion at stream crossings)	Unlikely	Stress to the pipeline and creation of potential wea points.	See Text (No Streams are crossed)	None
SOIL				
Construction resulting in: loss vegetative cover, and topsoil; mixi topsoil with less fertile subso deposition and sedimentation of lo lying lands from increased soil ero soil compaction. Permanent loss soils/productivity.	Likely	Conversion to grassland	Follow guidelines provided by FER Erosion Control, Revegetation, ar Maintenance Plan.	None
LAND USE				
Road crossings could disrupt tra during construction.	Likely	Short-term, minor		
	Unlikely	Short-term	Utilities would be located prior construction.	None
Pipeline storage yards would disr current land uses until the pipelin complete and lands are restored to prior condition.	Unlikely	Short-term	The site selected for pipeline stor currently unused and vacant	

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
LAND USES Cont.				
Clearing and construction of the pi would disrupt current land uses.	Likely	Short-term, temporary	78% of the proposed route is adja to existing, previously disturbed of-way. Landowners would be compensated for losses. Land wo be restored to prior conditions Activities such as grazing and agriculture would resume in rig way.	
Pipeline construction, if overlapping building the power plant, could inconvenience local area resident	Likely	Short-term temporary	Construction will occur over a per about 2 months. Because the perio disruption will be short, no mitiga planned.	None
RECREATION				
The pipeline crosses the Oregon T Construction would have a short-t (about 1 day) impact on trail use	Likely	Short-term minor	Access to trail users would be pro during construction	None
People using Messner Pond for fish or birdwatching could be disrupte during construcion of the pipelin Public access would not be impact	Unlikely	Short-term, minor	None	None
PROTECTED RESOURCES				
Oregon DOE-designated Protected Resources	Unlikely	Slight	None	None
VISUAL AND AESTHETIC RESOURCES				
The pipeline passes through areas slightly altered landscapes for most length. In these areas impacts wou moderate. In the industrial park landscape is highly altered and th pipeline would have low impact.	Likely	Moderate to low	Minimizing clearing to reduce con Stockpile and replace native soils disturbed areas. Restore contours revegetate disturbed areas with n plants.	None
AIR QUALITY AND NOISE				
Air emissions (carbon monoxide, nitrogen oxides, volatile organic compounds, particulate matter and dioxide) from construction of the p would be negligible.	Minimal	Localized and slight	None	None
Fugitive dust emissions would occur result of soil exposure	Minimal	Localized	Limit right-of-way clearing. See mulch to protect soil. Water exp soil during periods of high wind. low velocity equipment.	None
Construction of the pipeline wou increase noise levels.	Likely	Localized	Work will be limited to daytime h Mufflers and quieting devices woul used when needed. Work schedulin to avoid periods of noise annoyan Install temporary or portable no barriers around stationary nois sources, if needed.	None

Table 5-10 - Impact Table (continued)
Coyote Springs Pipeline Extension

Impact Table - Coyote Springs Pipeline Extension

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
LAND USES Cont.				
Clearing and construction of the pi would disrupt current land uses.	Likely	Short-term, temporary	78% of the proposed route is adja to existing, previously disturbed of-way. Landowners would be compensated for losses. Land wo be restored to prior conditions Activities such as grazing and agriculture would resume in rig way.	
Pipeline construction, if overlapping building the power plant, could inconvenience local area resident	Likely	Short-term temporary	Construction will occur over a per about 2 months. Because the perio disruption will be short, no mitiga planned.	None
RECREATION				
The pipeline crosses the Oregon T Construction would have a short-t (about 1 day) impact on trail use	Likely	Short-term minor	The trail would be restored to original condition after pipelin construction.	None
People using Messner Pond for fish or birdwatching could be disrupte during construcion of the pipelin Public access would not be impact	Unlikely	Short-term, minor	None	None
PROTECTED RESOURCES				
Oregon DOE-designated Protected Resources	Unlikely	Slight	None	None
VISUAL AND AESTHETIC RESOURCES				
The pipeline passes through areas slightly altered landscapes for most length. In these areas impacts wou moderate. In the industrial park landscape is highly altered and th pipeline would have low impact.	Likely	Moderate to low	Minimizing clearing to reduce con Stockpile and replace native soils disturbed areas. Restore contours revegetate disturbed areas with r plants.	None
AIR QUALITY AND NOISE				
Air emissions (carbon monoxide, nitrogen oxides, volatile organic compounds, particulate matter and dioxide) from construction of the p would be negligible.	Minimal	Localized and slight	None	None
Fugitive dust emissions would occur result of soil exposure	Minimal	Localized	Limiting right-of-way clearing. S or mulching to protect soil. Wat exposed soil during periods of hi wind. Using low velocity equipm	None

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
AIR QUALITY AND NOISE (Cont.)				
Construction of the pipeline wou increase noise levels.	Likely	Localized	Work will be limited to daytime h Mufflers and quieting devices woul used when needed. Work schedulin to avoid periods of noise annoyan Install temporary or portable no barriers around stationary nois sources, if needed.	None

Table 5-10 (continued)
Impact Table - Coyote Springs Pipeline Extension

The major impact to wildlife will be the temporary disturbance to wildlife habitat, largely consisting of disturbed grassland and grazed grassland. A small amount of shrub-steppe habitat may be impacted. These habitat impacts are not considered significant as they are common in the area, and are already disturbed. There may also be some direct mortality of wildlife in underground burrows or of young birds in ground nests during pipeline construction. This is not considered a significant impact to local populations of common species. Common species are widespread and abundant: mortality from construction would be minor relative to both local populations and normal annual mortality, and losses are expected to be replaced during the following breeding season.

Three sensitive avian species may be impacted by construction of the proposed pipeline: long-billed curlew, grasshopper sparrow, and burrowing owl. All are ground nesting birds whose nests and young could be destroyed if construction occurred during the breeding season in portions of the route where they might nest. The Washington ground squirrel could also be affected if it is using rodent burrows along the route. Other sensitive species were not observed in the project area, were observed outside the area to be impacted, or appropriate habitat was not found in the pipeline route and thus are not expected to be impacted by the project.

Mitigation - In 1994, surveys to determine breeding locations were repeated for long-billed curlews, grasshopper sparrows, burrowing owls, and Washington ground squirrels because part of the pipeline route had been shifted to the west side of Bombing Range Road.

Construction is not anticipated to occur during long-billed curlew, grasshopper sparrow, burrowing owl and Washington ground squirrel breeding season (May to August), in areas where these species have been found breeding. This will prevent destruction of eggs or young in nests.

All mitigations described in the vegetation section will be followed. Revegetation of disturbed areas with native plants will enhance wildlife habitats in the area. Revegetation should take place as soon as possible following disturbance to minimize the impact to wildlife populations and to reestablish wildlife habitats promptly.

Socioeconomic Impacts - Pipeline

Significant socioeconomic benefits are anticipated from the pipeline construction in the form of increased construction-related employment, income, and sales, and increased property tax revenues for Morrow County.

The only negative impact is the possible shortage of temporary housing for in-migrant construction workers due to competition for housing units with the construction workers for the cogeneration plant. Since the period of pipeline construction is only 5 to 6 weeks, this impact is considered minor. The housing shortage could be reduced by doubling up workers in motel rooms and apartments, and the use of recreation vehicles and mobile homes which are typically brought in by transient pipeline construction workers.

Public Health and Safety Impacts - Pipeline

Impacts on public health and safety are not expected. The PGT pipeline would be designed, constructed, operated and maintained in accordance with Department of Transportation Minimum Federal Safety Standards (CFR 49 Part 192).

Noise Impacts - Pipeline

No long-term noise impacts would result from construction of the pipeline. Increased noise levels resulting from construction activities would be localized. Nighttime noise levels normally would be unaffected because work would be limited to daylight hours. Construction activity occurring during the daytime (7:00 a.m. to 10:00 p.m.) is exempt from Oregon noise level requirements. Standard operation and maintenance of the pipeline would not significantly increase noise levels. Noise from blowdown would be temporary and would occur only during emergency situations or planned maintenance activities.

Recreation/Protected Resources/Visual and Aesthetic Impacts - Pipeline

No impacts will occur to recreation or protected resources. Access to the Oregon Trail entrance where it crosses the Boardman Bombing Range will be provided for hikers during construction.

Impacts will be negligible for visual and aesthetic resources during construction of the pipeline. Visual impacts along the generally flat, open route, are considered short-term because vegetation would recover during the year or two after construction. The revegetation plan mentioned previously will augment restoration of the right-of-way and working area.

Because it would be buried, the pipeline will not be visible for the entire length of the route. Only identification markers spaced at varying intervals would be evident. Above ground facilities which include the meter station and mainline valve would be located at the proposed cogeneration plant, and would have no adverse effect of the site. The mainline valve at the mainline system connection would have no visual effect on the area.

Cultural Resources Impacts - Pipeline

Intensive cultural resource field surveys were performed along the route, and no prehistoric or significant historic resources were found. Twelve historic resources were identified, only one of which was recommended as significant (the West Extension Irrigation Canal). Additionally,

investigation of the Oregon Trail crossing indicated that the trail segment is unrecognizable as a result of irrigation systems' construction and agricultural plowing. The segment, therefore, is not recommended as eligible for listing on the National Register. The SHPO, the Bureau of Reclamation, the Navy and the Umatilla were provided the survey results. To date, only the Umatilla have commented.

5.1.4 Cumulative Impacts

The Council on Environmental Quality (CEQ) defines ***cumulative impact*** as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

Within this context, several cumulative impacts are foreseeable.

Global Warming - Cumulative Impacts

The Coyote Springs Plant would release greenhouse gases. Greenhouse gasses reflect infrared radiation back to earth thus preventing heat loss to outer space. Because of this reflective capability greenhouse gases may contribute to global warming.

The proposed Coyote Springs Plant, together with PGE's existing Boardman Coal Plant and proposed cogeneration plants near Hermiston, Oregon would cumulatively emit approximately 15 percent of Oregon's 1990, or 0.04 percent of global human-caused 1990 CO_2 emissions. In spite of these facilities comparatively large CO_2 emissions, it is important to realize that the CO_2 emissions per thousand kWh from new efficient natural gas combustion turbines such as Coyote Springs and the proposed plants near Hermiston, are 40 to 50 percent of those from coal-fired plants. Cogeneration units emit even less if offset emissions from steam boilers are considered.

One mitigating action that has been taken to offset CO_2 emissions is planting trees. Trees use airborne CO_2 to grow. A new policy of the Clinton administration is to grant tax credits to utilities that take actions to offset CO_2 emissions from their generating plants. PGE has not decided to undertake CO_2 offset mitigation at this time.

Transmission Capacity - Cumulative Impacts

Integrating the Coyote Springs Cogeneration Plant over the BPA transmission system would diminish surplus capacity on BPA's McNary-Slatt 500-kV transmission line. Presently, the surplus capacity of this line has been rated at 700-800 MW, which is more than the total output of both Coyote Springs generation units. The proposed Hermiston Generation Plant and the Hermiston Power Plant also intend to use BPA's transmission system. Their combined capacity would be 800-900 MW. If all three proposed plants are built, demands would exceed BPA's existing

transmission system capabilities. Using projected completion dates for these units and assuming all three were integrated, BPA would need to install additional transmission capacity by the year 2000.

BPA has considered how this might be done. The most favorable solution would be to build a new 500-kV transmission line from McNary Substation adjacent to the 345-kV McNary-Ross transmission line to an interconnection with BPA's existing 500-kV Ashe-Marion lines northeast of Crow Butte, Washington. BPA's Ashe-Marion transmission lines were built in the late 1970s to integrate energy from several nuclear power plants proposed at the Hanford Reservation and near Boardman (Pebble Springs Nuclear Plant). Only one nuclear power plant was completed on the Hanford Reservation, which left surplus capacity on the Ashe-Marion 500-kV transmission lines. Tapping these lines in Washington north of Crow Butte would provide a path for power from the proposed cogeneration plants west to the Willamette Valley in Oregon. This option and other ways to expand transmission capacities would be evaluated for environmental impacts before a decision is made.

Groundwater - Cumulative Impacts

To assess the significance of potential present and future incremental impacts due to groundwater pumping, an inventory of groundwater rights has been prepared for both alluvial wells and basalt wells located within 1.6 km (1 mile) of the Coyote Springs Plant, including all Port of Morrow wells (see Table 5-11). The information was obtained from OWRD files and the Port of Morrow. The Port of Morrow controls 93 percent of the total permitted groundwater withdrawals within a mile of the Coyote Springs Plant. This does not include the City of Boardman's appropriation. The City of Boardman has a surface water right for 61 m^3 per minute (16,100 gpm [36 cfs]), of which 25 m^3 per minute (6,600 gpm [14.7 cfs]) is reported to be developed. Although the City of Boardman has a surface water right, some of this appropriation is supplied by groundwater from the alluvial aquifer because the City uses a Ranney Collector next to the Columbia River.

As shown in Table 5-11, 70 percent of the Port's permitted appropriation is from the alluvial aquifer and 30 percent is from the basalt aquifer. The total Coyote Springs Plant demand will make up 22 percent of the total Port-owned alluvial aquifer appropriation. As stated previously, the Coyote Springs Plant demand will not result in an increase in the alluvial aquifer pumping in the area since the wells supplying the project have been used historically by the Port for its other operations. In fact, there will be a net 0.17 m^3/s (4.5 cfs) reduction in pumping during the summer as a result of transferring the water right at the Carlson Sumps from a 6-month agricultural right to a 12-month municipal right. Furthermore, the cooling and blowdown wastewater generated by the Coyote Springs Plant will be reused to irrigate crops at the Port of Morrow land application sites. The Port presently beneficially reuses a total of nearly 3 800 000 m^3 (1 billion gal.) of water per year, which results in significant conservation of water that would otherwise be obtained from the Columbia River or groundwater.

While not directly associated with the Coyote Springs Plant, the Port of Morrow's new basalt well (Port Well # 5) will make up 41 percent 7.6 m^3/s (2,693 gpm) of the total permitted basalt aquifer withdrawals within a mile of the Coyote Springs Plant (Table 5-11). The OWRD has responsibility and authority to review and approve all requests for groundwater appropriations. The review process includes an assessment of whether or not the aquifer can support the additional pumping without injuring senior water rights holders. The OWRD has determined that Port Well #5 will not create unacceptable present or future impacts and has issued a favorable technical review of the Port's application. Further, OWRD has stated that there are sufficient water rights within the Port of Morrow to support the project.

If unacceptable impacts due to pumping are observed in the future, the OWRD has the authority to limit further appropriations and reduce the total pumping demand based on seniority of water rights. This authority has been exercised at the Ordinance Critical Groundwater Area (OCGA). The OWRD is not considering expanding the OCGA.

There is no information that indicates that the proposed groundwater withdrawals for the project would result in unacceptable present or future cumulative impacts. This conclusion is supported by the following:

- The Coyote Springs Plant will derive its water supply from existing permitted shallow aquifer water sources at the Port of Morrow.

- The OWRD has stated that there are sufficient water rights available at the Port to supply the project.

- There will be a net 0.17 m^3/s (6 cfs) reduction in pumping from the alluvial aquifer during the summer months when low flow in the Columbia River is a concern for fish protection reasons.

- OWRD has issued a favorable technical review of the Well #5 permit application.

- The number of groundwater users near the Coyote Springs Plant are limited; the Port controls 93 percent of the groundwater rights within 1.6 km (1 mile) of the project.

- OWRD has the responsibility to monitor future impacts caused by overpumping and will limit further appropriations if it is found that senior water rights holders are being adversely impacted.

Threatened or Endangered Salmon - Cumulative Impacts

In testimony relating to PGE's Application for a Site Certificate before the Oregon EFSC John Pizzimenti, a scientist specializing in studies on fish in regulated rivers, provided the following explanation of how the Coyote Springs Cogeneration Project might impact threatened or endangered salmon; "In theory, the Coyote Springs project could impact fish in the Columbia River in the following four ways:

1. ***Entrainment*** of fish through water withdrawal intakes.
   This does not occur because the water supply is from wells and is not taken directly from the river.

2. Degradation of water quality through land use modification or point source discharge.
   These do not apply because construction and operation permits will require appropriate control measures. There are no planned discharges from the project to the river.

3. Habitat destruction.
   This does not occur because the project is totally away from the river and does not require construction in the river.

4. Reduction in flows of the Columbia River.
   A maximum of 0.17 m^3/s (6 cfs)) will be appropriated to the project through existing water supply wells. These wells rely on aquifer that have connection with the river and thus affect the water budget of the river up to a maximum of 0.17 m^3/s (6 cfs)." (Pizzimenti, 1994)

Thus, the avenue by which cumulative impacts might affect threatened or endangered salmon species is by means of water withdrawals from shallow aquifers bordering the Columbia River. In 1992, Jeff Barry of CH_2M Hill conducted an extensive study of groundwater in the Boardman area in connection with an EPA funded study titled "Wellhead Protection Demonstration Project, Boardman, Oregon." Jeff Barry was hired to help assess the cumulative impact of groundwater withdrawals which has been used to predict cumulative impacts to threatened or endangered Snake River salmon species.

In Appendix C Beak Consultants concluded that the Coyote Springs Project "is not expected to result in direct mortality or disturbance (visual or auditory) to listed species." This conclusion is supported by the testimony of John Pizzimenti before the Oregon EFSC where he concludes "... diminished flows due to the Coyote Springs project are negligible. They will have no effect on the survival or recovery of threatened or endangered fish species."

Table 5-11 was developed by CH_2M Hill and provides an inventory of existing groundwater rights within a 1.6 km (1 mile) zone surrounding the Coyote Springs Plant. The total alluvium

Table 5-11
Inventory of Groundwater Rights
Near the Coyote Springs Cogeneration Project

Well Location (by section)	Owner	Local Name	Distance from Site (ft)	(cfs)	(gpm)	Aquifer	Use	Water Right Status	Permit, or Certificate Number	Well Depth (ft)
T4N R25E 1 ab	Port of Morrow	Farm Well #4	13,000	9.60	4,310	Alluvium	Irrigation	Application	Not available	
T4N R25E 1 bb	Port of Morrow	Farm Well #5	12,000	(This well is part of the above water right application)						
T4N R25E 10 aac	Port of Morrow	Well #4	3,500	1.69	758	Deep basalt	Industrial	Permit	10975	900
T4N R25E 10 abc	Port of Morrow	Toadvin Pond	2,300	6.53	2,929	Alluvium	Irrigation	Permit	10550	
T4N R25E 10 acc	Port of Morrow	Well #1	2,000	3.00	1,346	Deep basalt	Industrial	Permit	7158	685
T4N R25E 10 ada	Port of Morrow	Carlson Sumps 1&2	4,200	2.26	1,013	Alluvium	Municipal	Certificate	51782	
T4N R25E 10 ba	Port of Morrow	Well #3	1,000	2.00	898	Alluvium	Municipal	Certificate	47191	685
T4N R25E 10 bbd	Port of Morrow	Well #2	1,300	1.11	498	Deep basalt	Municipal	Certificate	58866	685
T4N R25E 12 bbc	Port of Morrow	Farm Well #1	4,000	1.60	718	Alluvium	Irrigation	Certificate	57216	71
T4N R25E 11bd	Port of Morrow	Well #5	4,000	6.00	2,693	Deep basalt	Municipal	Application	13408	900
T4N R25E 2 caa	Port of Morrow	Farm Well #3	7,000	1.58	709	Alluvium	Irrigation	Certificate	51822	93
T4N R25E 12 bba	Port of Morrow	Farm Well #2	10,000	2.88	1,293	Alluvium	Irrigation	Certificate	51822	88
T4N R25E 9 acd	Riverview Cemetary		2,000	0.06	27	Deep basalt	Irrigation	Certificate	34385	470
T4N R25E 9 cba	City of Boardman		5,000	1.50	673	Deep basalt	Municipal	Certificate	34275	585
T4N R25E 10 ccb	Homer G. Prichard		2,000	0.60	269	Shallow basalt	Irrigation	Certificate	56159	72
T4N R25E 10 ccb	Homer G. Prichard		2,000	0.28	126	Deep basalt	Irrigation	Certificate	56160	502
T4N R25E 10 dcb	Tallman and Sons		3,000	0.48	215	Shallow basalt	Irrigation	Permit	11026	210
			Total withdrawal:	41.17	18,476					
			Total alluvium withdrawal:	26.45	11,869					
			Total basalt withdrawal:	14.72	6,606					
			Total Port of Morrow withdrawal:	38.25	17,165					
			Proposed cogeneration demand:	5.95	2,668					

cfs = cubic feet per second
gpm = gallons per minute

withdrawal from the 1.6 km (1 mile) zone is 0.17 m^3/s (26.4 cfs). The demand of Coyote Springs 0.17 m^3/s (6 cfs) is included within this total. These withdrawals would not significantly impact flows in the John Day pool of the Columbia River.

When assessing cumulative impacts, reasonably foreseeable future actions are to be evaluated in combination with the proposal. The following future actions are reasonably foreseeable: (1) the Hermiston Generation Project (see page 2-3) would reduce flows in the McNary pool of the Columbia River by about 0.17 m^3/s (6 cfs); (2) the Hermiston Power Project would also reduce flows in the McNary pool of the Columbia River by about 0.17 m^3/s (6 cfs); (3) additional industrial development is likely to occur within the Port of Morrow, however the water demands of such uses is unknown.

BPA, the Bureau of Reclamation and the Army Corps of Engineers are reviewing the operation of 14 Columbia River system hydro projects. A Draft System Operation Review EIS is scheduled for release in late July 1994. Options being considered would drop the level of the John Day pool to minimum irrigation pool level of 80 m (262.5 ft.) or alternatively the minimum operation pool level of 78 m (257 ft.) minimum needed to operate the navigation locks. The John Day Pool would drop 1.5 - 3 m (5-10 ft.) if these options are selected. The outcome of the System Operation Review is considered speculative and thus is not included in the cumulative impact analysis for the Coyote Springs Plant.

Cumulative alluvial aquifer water withdrawals attributed to the Coyote Springs Plant when added to existing and foreseeable future water uses is not expected to jeopardize the continued existence of endangered or threatened Snake River salmon species. If the Coyote Springs Plant, existing withdrawals from the alluvial aquifer, and foreseeable future withdrawals are added together, the cumulative reduction of Columbia River flows due to groundwater withdrawals would be about 1.1 m^3/s (38 cfs). Compared with the spring runoff during juvenile migration in the John Day pool of the Columbia River of 7400 m^3/s- 9800 m^3/s (260,000-343,000 cfs) in 1983, the Coyote Springs Plant withdrawal of 0.17 m^3/s (6 cfs) even when viewed in an incremental and cumulative manner is insignificant. The significance of an incremental 0.17 m^3/s (6 cfs) decrease in flow cumulating to a 1 m^3/s (38 cfs) flow reduction, might be debated. However, in John Pizzimenti's testimony he states; "there is no evidence that mainstream flow is the primary determinant of salmon survival in most years in the Snake and Columbia rivers, and especially in the John Day pool." Thus flows may not be a significant factor in salmon survival.

Regional Energy Resource Needs - Cumulative Impacts

The Coyote Springs Plant, together with the combustion turbine generation projects proposed near Hermiston, if completed, would provide over 1300 aMW of energy. BPA's *1992 Pacific Northwest Loads and Resources Study* projects a 3,425 MW deficit in 2003 based on the medium load forecast. These plants in combination would satisfy a significant portion of the Northwest's forecast energy needs.

The three combustion projects would reduce flows in the Columbia River which reduces the volume of water available to downstream turbine generators. It is estimated that Coyote Springs Plant's water withdrawal of 171 liters (6 cfs) would have produced 1,000,000 kilowatt hours of electricity annually if allowed to remain in the Columbia River. Assuming the other proposed turbine generators are built and have an equivalent effect, 3,000,000 kilowatt hours of generating capability would be foregone. The average value of this energy is assumed to be 60 mills (replacement cost), annual lost revenues would be $180,000.

Compared with the combined output of the three plants (1300 aMW), a 3 aMW loss in energy is not significant. The revenue loss of $180,000 would be offset by BPA wheeling charges to project sponsors. BPA would receive between $6-8 million in annual revenues from PGE if both units are built and wheeled over the BPA transmission system. Similar wheeling charges would accrue from the Hermiston Generation Project. The Hermiston Power Project would provide for BPA loads and thus would not yield wheeling revenues. Annual wheeling revenues would range from $12-16 million and more than offset the lost energy revenues.

Tax Revenues - Cumulative Impacts

Construction of the Coyote Springs Cogeneration Project in Morrow County and the two cogeneration projects proposed for the Hermiston area could offset the tax reduction measures mandated by Oregon's Measure 5 for local governments in the area. The state of Oregon could also benefit, in that the state, under Measure 5, has the responsibility of providing the necessary funding for the local school districts beyond the maximum of $5/$1000 of valuation that can be collected for tax year 1995/96 and beyond.

Housing - Cumulative Impacts

A shortage of temporary housing facilities in the area could result if all three cogeneration projects' peak construction periods occur concurrently. Construction of large-scale cogeneration plants, such as the proposed projects, normally take place over an 18-24 month period. At peak construction of the Coyote Springs Project, an estimated 200 workers would be on-site (Mayson, 1993). At peak construction for the Hermiston Power Project, 250 workers are expected to be employed (Smith, 1993); U.S. Generating Company’s Hermiston Generation Project peak employment is expected to be 450 workers (Oregonian, September 1993).

Both PGE and U.S. Generating Company propose to begin construction sometime in 1994. However, the decision to start construction of the Hermiston Power Project is dependent on BPA’s need for power. At this time Hermiston Power Project sponsors state construction would begin between 1995 and the year 2000 (Hermiston Power Partnership). If peak construction were to occur simultaneously, more than 900 workers could be working in the area.

While not all construction workers would likely be from outside the local area, most construction workers are likely to seek temporary housing in the local area. A number of these workers may bring dependents with them during project construction, although this figure is not expected to be significant.

Natural Gas Supply - Cumulative Impacts

The source of natural gas for the proposed cogeneration plant is from actively producing gas fields in Alberta and British Columbia, Canada. The number of natural gas wells that would be needed to supply PGE requirements was estimated by PGT. The average total yield of Canadian natural gas wells was divided into the total requirements of the Coyote Springs Plant (41 billion BTUs per day). Using this method, the output of 16 gas wells would be used each year by the Coyote Springs Plant (PGT, 1993). For perspective, 4,000 Canadian gas wells were drilled in 1991 and the total number of wells in Canada number in the hundreds of thousands (PGT, 1992). Thus the Coyote Springs Plant would use only a small amount of gas compared to that available in Canada. The world's proven reserves are expected to last approximately 58 years at the present consumption rate (*Inside Energy/with Federal Lands, 1993*).

5.2 Impacts of the No Action Alternative

The No Action alternative assumes the Coyote Springs Plant is not built. Impacts reported for the proposed Coyote Springs Plant and associated transmission facilities and the pipeline would not occur, at least not to the same extent and in the same locations. If the No Action alternative is chosen, PGE's need to replace energy lost through closing the Trojan Nuclear Power Plant would not be met.

Two similar cogeneration plants are proposed at Hermiston, Oregon. The proximity of BPA's transmission lines to these plants makes wheeling of power over BPA's lines almost certain. Surplus capacity on BPA's transmission lines would still be used under the No Action alternative.

As the need for additional power resources would remain under the No Action alternative, PGE would most probably build a generation plant of similar size and type at a different location. PGE could also acquire an equivalent amount of energy from independent power producers. Either option appears likely, considering that two very similar generation plants have been proposed at Hermiston, Oregon, and energy produced by combustion turbines is cost-effective.

PGE's investment in the Coyote Springs Project would be lost under the No Action alternative, as would the time committed to this proposal. Development of another generation proposal would take several years to reach an equal level of refinement. In the interim, PGE would need to acquire power during periods when demand exceeds their energy resources, as was the case in winter 1992-1993. The cost of power acquired during winter peaks is high, which would increase costs to PGE's customers.

To Chapter 6

5. Environmental Consequences

This section describes the impacts of the proposed action and alternatives to the proposed action on the environment. Most impacts are from the proposed cogeneration plant.

Impacts are organized by proposed action, that is, impacts to resources from the cogeneration plant are first, followed by impacts from the transmission line and the natural gas line. Impact matrices are provided at the beginning of these impact discussions and provide an overview of predicted impacts. Impact narratives follow the matrices and provide more detailed explanations of predicted environmental consequences.

Environmental Impact Definitions - Analysts evaluated the proposed action and alternatives to determine if these actions would cause significant adverse change to present environmental conditions. A significant adverse change to present environmental conditions would satisfy one or all of these outcomes:

1. Create an effect that cannot be mitigated.
2. Significantly reduce the quantity or quality of a regionally or nationally significant resource.
3. Pose a clear risk to human health or safety.
4. Affect the long-term productivity of the affected environment.
5. Irreversibly or irretrievably damage the environment.
6. Consume significant quantities of non-renewable natural resources.

Analysts considered short-term and long-term impacts. Impacts that do not meet the definitions above, or that can be mitigated, are not considered significant.

5.1 Impacts of the Proposed Action

5.1.1 Coyote Springs Cogeneration Plant Impacts

Impacts predicted to occur from the cogeneration plant are summarized in Table 5-1. Narrative descriptions of predicted impacts are provided below.

Land Use Impacts - Cogeneration Plant

Construction of the proposed power plant would alter the land use at the proposed site from gravel mining to an industrial use. The proposed project has been sited in an industrial park and is appropriately zoned for the proposed use. Power-generating facilities are permitted uses in the Port Industrial Zone, under the Morrow County Zoning Ordinance, MC-C-2 Section 3.073 (1)(L). A land use compatibility statement for the proposed use was approved by the County of Morrow

and the City of Boardman in September 1991. The City of Boardman submitted a letter commenting on the DEIS that states that the project is in complete compliance with zoning and the City's Comprehensive Plan. Furthermore, the proposed project would be surrounded by other industrially zoned parcels. No land use conflicts or incompatibilities with existing or future industrial land uses are anticipated.

Transportation Impacts - Cogeneration Plant

Possible train derailments adjacent to the proposed project site are unlikely to impact any of the proposed facilities (Egan, 1993). With a permanent work force of 20-30 full-time employees, the proposed project would generate approximately 40-60 vehicle trips per day in the local area. Construction vehicles and equipment used in the construction of the proposed project could damage existing roads in the local area.

Mitigation - Road improvements necessary to provide access to the proposed facility could be financed and constructed by PGE in accordance with the Morrow County Street Classification policies and the County's Transportation Policy #10. Prior to any construction activities taking place, PGE could place sufficient funds in escrow to return any roads damaged during construction to their preconstruction condition.

Recreational Impacts - Cogeneration Plant

Recreational facilities and opportunities in Morrow County would not change as a result of this project (PGE, 1993).

Construction noise could cause short-term impacts; noise could increase to 68 dBA L_{max} for 4 hours (PGE, 1993). Temporary disturbance of recreational opportunities at Messner Pond may occur during plant construction due to increased noise levels. Plans to develop recreational trails and/or other facilities would not be impacted by developing the power plant near the west side of Messner Pond. No disturbance of recreational opportunities at Messner Pond during facility operation is expected, so no mitigation is needed.

Primary recreational facilities and opportunities within the 8-km (5-mile) impact area are at the Umatilla National Wildlife Refuge, Boardman Marina Park, Coyote Springs Wildlife Area, and Riverside High School. These facilities would not be impacted by the proposed plant.

The visual impact discussion describes visual impacts to recreational areas and activities.

Impact Table - Coyote Springs Cogeneration Plant

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
WATER				
Resulting from Construction Activities				
Messner Pond	Unlikely	None	NPDES requirements	DEQ 1200 C
Columbia River	Unlikely	None	NPDES requirements	DEQ 1200 C
Unnamed Irrigation Pond	Certain	Moderate	NPDES requirements	DEQ 1200 C
Resulting from Facility Operation				
Shallow aquifer water quality	Unlikely	Slight	None	Water Rights Permit
Degradation of water quality	Unlikely	Slight	City of Boardman's sewa treatment facility	None
Deep aquifer lowering of w table	Possible	Slight	None	Water Resourc Permit
Spills of fuel or other hazardous materials	Unlikely	Major	NPDES requirements	None
Fisheries impacts	None	None	NPDES requirements	DEQ 1200 C
Wetlands/Messner Pond	Unlikely	Slight	NPDES requirements	DEQ 1200 C
Boardman sewer facilities	Likely	Unknown	None	None
VEGETATION				
Habitat disturbance	None	None	Recontouring and revegetation	None
Sensitive plant species	None	None	None	None
WILDLIFE				
Fauna				
Mortality of individuals	Unlikely	Unlikely	None	None
Temporary displacement	Unlikely	Unlikely	Place fence around swall nests and plant trees o west shore of Messner Po	None
Stress in crucial life cycle times	Unlikely	Unlikely	None	None
Wildlife Habitat				
Wildlife habitat impact sh steppe	Minimal	Unlikely	None	None
FISH				
Mortality/displacement	Unlikely	None	None	None
SPECIAL STATUS SPECIES				
None found in project area	None	None	None	None

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
THREATENED AND ENDANGERED SPECIES (Federally Listed)				
Plants				
None found in project area	None	None	None	None
Wildlife				
Peregrine falcon	Unlikely	None	None	None
Bald eagle	Unlikely	None	None	None
Fish				
Salmon River fall chinool salmon	Unlikely	None	None	None
Salmon River spring/summ chinook salmon	Unlikely	None	None	None
Salmon River sockeye salmon	Unlikely	None	None	None
GEOLOGIC HAZARDS				
Seismic Hazards (Possibil that ground shaking, fault c soil liquefaction, or seism induced waves and floodin could affect the integrity c facility.)	Possible	Local area	Construct facilities accor to the Uniform Building Code, and the appropriate importance factor for essential and hazardous facilities.	Building Perm
SOIL				
Wind erosion due to remova vegetation	Slight	Localized short-term	NPDES Requirements	DEQ 1200 C
Water erosion due to remo of vegetation.	Slight	Localized short-term	NPDES Requirements	DEQ 1200 C and Plot Plan Revi Permit
LAND USE				
Land use will change fron vacant to industrial.	Certain	Localized	None	None
Plant will generate approximately 50 vehicle each day.	Likely	Localized	Project proponent could f necessary road improvements.	None
Construction vehicles ma damage local roads	Unlikely	Project Area	Project proponent could f any repairs necessary t repair roads to preconstruction conditi	None
CULTURAL RESOURCES				
Historic, cultural and archeological resources	Unlikely	None	Site-specific survey	None
SOCIOECONOMIC				
Significant increase in th assessed value of Morrow County	Likely	County-wide	Positive impact	None
Construction and operation proposed project will incre employment in local area	Likely	Local area	Positive impact	None

Table 5-1
Impact Table - Coyote Springs Cogeneration Plant

Impact Table - Coyote Springs Cogeneration Plant

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
SOCIOECONOMICS Cont.				
Construction of proposed project will increase dema for temporary housing	Likely	Local area	None	None
Incremental increase in demand for law enforceme and fire protection servic	Likely	Plant/local a	Increased property tax revenue should more tha compensate for increase demand	None
Increase in school distri enrollment	Likely	County-wide	Increased property tax revenue should more tha compensate for increase costs	None
Increased demand for libra services.	Likely	Slight-local area	Increased property tax revenue should more tha compensate for any increased demand.	None
RECREATION				
Nearby recreation sites	Unlikely	None	None	None
VISUAL AND AESTHETIC RESOURCES				
Nearby residences, Washington Highway 14, I- Columbia River, portions of Umatilla Wildlife Refuge, a the Coyote Springs State Wildlife Refuge.	Likely	Moderate	(1) Paint buildings and exhaust stacks in neutr shades to minimize visu impacts. (2) Minimize th amount of exterior lightin night. (3) Use native mat landscaping.	None
Other key observation points	Unlikely	Slight	(1) Paint buildings and exhaust stacks in neutr shades to minimize visu impacts. (2) Minimize th amount of exterior lightin night. (3) Use native mat landscaping.	None
PROTECTED RESOURCES				
Oregon DOE designated protected resources	Unlikely	Slight	None	None
PUBLIC HEALTH AND SAFETY				
Toxic and hazardous waste	Minimal	Localized area	Requirements of SPCC Pla pursuant to the Clean Wa Act	None
Electric fields	Likely	None	Standard safety precautions	None
Magnetic fields	Likely	Unknown	None	None
NOISE				
Construction noise	Likely	Significant, localized/short term	None	None
Operation noise (increase above background)	Likely	Insignificant, localized/long-term	None	None

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
OTHER ENVIRONMENTAL ISSUES				
Global warming	Likely	Slight	Control emissions by be available control technolo Natural gas used as fue	None
Acid rain	Likely	Slight	NOx emission minimized with selective catalyt combustion.	None
AIR QUALITY				
Particulates released duri construction	Likely	High-localized	Wet soil as needed.	None
Mist from cooling tower	Likely	Localized-slight	None	None
Criteria Pollutants				
NOx	Likely	Moderate	Analyze impacts to so vegetation and visibili demonstrate non-impact Class 1 areas. Use "bes available control technology."	Prevention of Significant Deterioration (PSD), and DEQ Air Contamina Discharge Permit
CO	Likely	Moderate	See above	Prevention of Significant Deterioration (PSD), and DEQ Air Contamina Discharge Permit
SO2	Likely	Slight	Use of natural gas	DEQ Air Contaminant Discharge Permit
TSP/PM-10 (Particulate Matter)	Likely	Slight	See above	DEQ Air Contaminant Discharge Permit
Air Toxins				
Iron, arsenic, barium, sil (cooling towers)	Unlikely	None	None	None
Ammonia (Boilers and turbines)	Likely	Slight	Selective catalytic redu system adjusted to mini ammonia release.	DEQ Air Contaminant Discharge Permit
Formaldahyde (Boilers and turbines)	Likely	Slight	Good combustion controls	DEQ Air Contaminant Discharge Permit
Odor	Unlikely	None	None	None
Photo-Chemical pollutants	Minimal	Slight	None	None

Table 5-1 (continued)
Impact Table - Coyote Springs Cogeneration Plant

Natural Resource Impacts - Cogeneration Plant

Soils and Geology

Soils - Minimal impacts to soils are expected from plant construction other than construction-related impacts such as fugitive dust leaving the site, and erosion caused by soil disturbances during construction. Determination of soil impacts are based on soil characteristics, topography, vegetation, and erosion elements including water and wind. The proposed project site is mostly flat, dry, and sparsely vegetated. Water erosion would be minimal because soils are permeable. Topsoil and vegetation must be replaced to avoid wind erosion. An Erosion and Sedimentation Control Plan was prepared for the Coyote Springs Plant by Ebasco (see Appendix H). The plan was approved by the Morrow County Planning Department on December 6, 1993. Measures such as sediment basins, sediment traps, storm inlet protection, and drainage swales would be used to control erosion and sedimentation.

Seismic Hazards - Earthquake damage to structures is based on the magnitude of the event, distance from the earthquake epicenter, type and depth of soils, degree of saturation of underlying soils, and type of construction and materials used in the structure.

The proposed project site is east of the Cascade Mountain Range in Oregon and within seismic Zone 2B, according to the 1991 Edition of the UBC. Construction must be based on the seismic zone factor Z of 0.2 (.2g-Acceleration/gravity) or greater in this area. Structures designed to pass this code are considered appropriate for occupant safety for a seismic event with a 475-year return period. However, facilities may be inoperable or unsafe. The minimum code is adjusted depending on the type of facility and soil conditions at the site.

To ensure essential facilities are operable and hazardous facilities (containing or supporting toxic or explosive substances) would not endanger the public, the seismic zone factor is multiplied by an importance factor of 1.25. The seismic zone factor for construction of this type of facility in this zone is .25 (for a seismic event with a 950-year return period).

Soil type at the plant site may raise the seismic zone factor and require an appropriate change in building construction. Soil liquefaction is a phenomenon in which loose, submerged, cohesionless soils lose strength during cyclic loading in strong earthquake ground shaking. Clay soils and an increase in the density of cohesionless soils minimizes this effect. A Standard Penetration Test (SPT) was conducted to determine the density of the soils at the plant site. (PGE, 1993.)

Seismic Risk - The Coyote Springs Project location is within seismic zone 2B. The ODOE Proposed Order, (Appendix D, page 22) requires that PGE design and construct the facility to address any estimate of peak ground acceleration which exceeds that covered by seismic zone 2B.

Ground Shaking - All non-critical buildings and structures would be designed and constructed in accordance with the latest UBC requirements with an importance factor of 1.00. All critical project structures would be designed and constructed with an 1.25 importance factor.

Fault Offset Hazard - The likelihood of surface rupture or fault offset in the project area is very remote, due to the lack of identifiable active faults in the area.

Soil Liquefaction - Loose layers of fill in upper materials at the site would be compacted to minimize the potential for soil liquefaction. The potential for liquefaction in underlying dense and very dense soils is slight.

Seismically Induced Waves and Flooding - During strong earthquakes, strong waves such as tsunamis or seiches can be generated in large bodies of water. These waves can cause substantial damage to shoreline facilities. Seiches occur in large inland bodies of water such as lakes or wide rivers.

The site is about 190 m (625 ft.) south of the Columbia River. Columbia River water levels are controlled by a system of dams to a minimum pool level of elevation 78.3 m (257 ft.) and a maximum pool level of 81.7 m (268 ft.). The plant site elevation is 86.7 m (285 ft.), which is well above the maximum pool level. An existing earth embankment for the railroad is between the river and the main plant site. The chance of seismically-induced wave damage such as a seiche, and damage from flooding is remote.

Stability - Plant operations would not impact site stability. Heavy equipment would be operated on properly designed spread footing and mat foundations. Water storage tanks would be supported on grade and on ring footing foundations. All foundations would be on compacted fill placed over the DDC-densified fill during construction. Chemical storage tanks would be surrounded by confinement barriers to contain potential spills or leakage. Barriers would be either a reinforced concrete slab with surrounding perimeter walls or a perimeter earth berm with a waterproof membrane.

Fish and Wildlife Impacts - Cogeneration Plant

Fisheries - Potential impacts to fish and wildlife during construction and operation of the proposed project were evaluated based on the likelihood that the project would cause direct mortality of individuals, temporary or permanent loss or alteration of habitat, or disturbances that may cause wildlife to avoid areas of suitable habitat.

Filling the gravel pond at the plant site would likely eliminate fish and low-quality fish habitat. The number and kind of fish impacted is not known, but would not be significant based on the poor quality of fish habitat and the limited recreational fishing that occurs there.

No impacts on water quality or fish habitat would occur in the Columbia River or Messner Pond from construction or operation of the proposed project. During operation, all wastewater from the plant would be discharged to the Port's industrial wastewater system. Wastewater with oil contaminants would be treated prior to discharge to the City of Boardman sewage treatment facility.

Wildlife - About 9 ha (22 acres) of wildlife habitat of varying quality would be permanently lost from construction of buildings and other project facilities at the main plant site. Some direct mortality of wildlife could occur during project construction. This is particularly true for less mobile species such as reptiles and small mammals, burrowing species (e.g., ground squirrels), and ground-nesting birds (e.g., lark sparrow, western meadowlark) in areas where vegetation clearing and construction equipment traffic would occur. The impact of this loss of wildlife is considered insignificant due to the low quality of habitat that currently exists there. Proposed landscaping around the site following construction would provide new, although low-quality, wildlife habitat.

During construction and operation of the cogeneration plant, wildlife use of Messner Pond could be inhibited by increased human activity. This is particularly true for species most sensitive to visual and auditory disturbances (e.g., mule deer, some raptors). However, a well-developed riparian fringe dominated by Russian olive trees surrounds much of Messner Pond, and would provide some buffering of visual and auditory disturbances from the main plant site. In addition, wildlife use of the pond and surrounding habitat currently exists with daily visual and auditory disturbances from trains, trucks, and a rock-crushing plant. These existing sources of noise and visual disturbance are closer to the pond than construction activities at the plant site would be.

PGE conducted a detailed study of cooling tower impacts to Messner Pond. Operation of the cooling tower may deposit dissolved chemicals contained within drift water droplets into Messner Pond and on surrounding vegetation. The chemicals of greatest concern, heavy metals, would either be nondetectable or only present in trace amounts. The majority of dissolved chemicals in drift water occur commonly in nature (salts). The operation of the cooling tower is not expected to result in adverse effects to Messner Pond water quality and surrounding vegetation, and any change in chemical composition within the pond would be below levels considered toxic.

Mitigation - PGE, in conjunction with ODFW, prepared an Ecological Monitoring Program. This plan is in Appendix E. This plan outlines a number of actions that will be taken to prevent project impacts to fish, wildlife and vegetation.

To provide a visual and sound buffer, PGE proposes to plant trees along the west shore of Messner Pond. The plantings would extend from the railroad embankment to the gravel pond.

If other concerned agencies or subsequent studies indicate there would be adverse impacts on fish, wildlife, or their respective habitats, PGE would develop and implement (in conjunction with ODFW) a ***mitigation*** plan and other measures as may be deemed necessary to offset anticipated impacts.

Threatened and Endangered Species Impacts - Cogeneration Plant

Federally Listed Animals - Impacts to listed threatened or endangered animal species were evaluated by Beak Consultants. A copy of their Biological Assessment in Appendix C. The bald eagle, the peregrine falcon, and three salmonoids are the only listed species known or suspected to occur in the project area. Specialists evaluated impacts using the following general criteria: potential of the project to cause direct mortality of individuals, alter suitable habitat either temporarily or permanently, or cause a disturbance (visual or auditory) that results in avoidance of suitable habitat. The Biological Assessment concludes: "the proposed action may effect, (sic) but is not likely to adversely effect (sic) individuals or populations of the bald eagle or its habitat. It is also concluded that the proposed action will not effect (sic) individuals or populations of the peregrine falcon, Snake River spring/summer chinook salmon, Snake River fall chinook salmon, and Snake River sockeye salmon or their habitat. These conclusions are based on strict adherence to the conservation measures described herein..."

Measures defined to reduce impact on listed species are described in Appendix C, and PGE has agreed to adhere to these measures. Possible actions include: erection of perch guards to protect raptors from electrocution; provide information to construction workers on minimizing disturbance; planting of trees along the shore of Messner Pond; construction of a sediment retention pond to protect water quality; monitoring wildlife impacts during construction, and if necessary, consulting with the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service if unanticipated impacts occur.

BPA has reviewed the Biological Assessment and concurs with the opinion that the Coyote Springs Cogeneration Project is not likely to affect the bald eagle and the peregrine falcon. A copy of this detemination and the Biological Assessment were sent to the U.S. Fish and Wildlife Service. BPA also agrees with the no effect determination regarding impacts to threatened or endangered salmon species. BPA provided the National Marine Fisheries Service with a copy of the Biological Assessment and the no effect determination. (See also Cumulative Impacts.)

State Special Status Species Impacts - Special status species identified within the project area were described in Chapter 4. See Federally listed species if a species is listed by both the state and Federal government. Although four species of concern (American white pelican, Franklin's gull, bank swallow, and long-billed curlew) were documented to occur in the project area, only the bank swallow colony on the plant site would potentially be impacted by the proposed project.

Based on field surveys, bank swallow populations in the area appear abundant. On the railroad embankment just north of the project site, 3-4 dozen nest holes were observed. It is estimated that 12 pairs are actively using these nests. PGE proposes to build a fence to restrict pedestrian and equipment intrusion near the bank swallow colony. The fence would be a three-strand wire fence about 1.5 m (5 ft.) high and would extend about 76 m (250 ft.). The fence would be about 7.6 m (25 ft.) south of and parallel to the bank swallow colony site. The fence would have a sign that identifies the area as sensitive bird habitat. The fence would be built during the winter, prior to the first arrival of any bank swallows (April 1). Based on these measures, project construction is not expected to negatively impact the bank swallow colony.

PGE has prepared an Ecological Impact Monitoring Plan (Appendix E), in conjunction with the ODFW to insure protection of nearby vegetation, fish and wildlife. Potential measures included in the plan are: seasonal restrictions on construction within a species-specific radius of a nest site (e.g., Swainson's hawk, long-billed curlew) or colony location (e.g., Washington ground squirrel); and placement of nest platforms on transmission towers for raptors (e.g., Swainson's hawk, ferruginous hawk).

Federally Listed Plants -There are no known or suspected Federally listed threatened or endangered plant species within the project area. A survey for threatened and endangered plants, conducted during spring 1993, identified no special status plant species (see Appendix A).

State Special Status Plants - Potential impacts on special status plant species were evaluated relative to OAR 603-73-090. A survey for threatened and endangered plants, conducted during spring 1993, identified no special status plant species within the impact zone (see Appendix A).

Water Impacts - Cogeneration Plant

Construction of the proposed project could also cause erosion from stormwater or wind. Ground disturbing activities during construction of the proposed project could lead to erosion of unprotected soil, which could cause siltation of adjoining waterways. The Oregon Department of Energy's Proposed Order imposes a series of conditions on PGE relating to preventing water impacts. A copy of the Proposed Order is in Appendix D. A ***stormwater pollution prevention plan (SWPP Plan)*** was prepared by PGE and approved by Morrow County in December 1993. A copy of the plan is in Appendix G. PGE also has prepared an Erosion and Sedimentation Control Plan (see Appendix H). This plan will serve as a guide to protect water from soil disturbing activities during construction of the plant.

Surface Water - No direct impact to the Columbia River is expected from construction. Plant operation may reduce the volume of water in the alluvial aquifer and might reduce the volume of water recharging the river. Because the gradient is from the southeast to the northwest, the river is not expected to recharge the alluvial aquifer being used by the City of Boardman.

No direct impact to Messner Pond is expected by construction. Particulate deposition from cooling tower drift will not result in significant adverse impacts to Messner Pond air quality and surrounding vegetation (see Appendix I, Potential Cooling Tower Drift Effects on the Water Quality and Vegetation at Messner Pond).

Wastewater effluent from the facility would be discharged to the Port's industrial wastewater system. Effluent from the industrial wastewater system is used for crop irrigation (see Exhibit O, PGE, 1993). No adverse impact to protected areas is expected from use of this existing wastewater treatment system.

Impacts to the gravel quarry pond would be direct and long term**.** The impact would be caused by filling 1.25 ha (3 acres) of the pond with gravel (presently 4.36 ha [10.4 acres]) for the plant foundation. No impact is expected from plant operation. Mitigation for filling the pond is not expected to be required as pits excavated in dry land for obtaining fill, sand, or gravel are not regulated under the Clean Water Act (40 CFR328.3(e)) or under Oregon's Removal-Fill Law (OAR 141-85 010).

PGE has registered for coverage under the Oregon DEQ General Permit 1200 to construct and operate storm water control facilities and to discharge treated storm water to waters of the state (see Appendix G). Morrow County issued a National Pollutant Discharge Elimination System (NPDES) Storm Water Discharge Permit to PGE on May 27, 1993. An Erosion and Sedimentation Control Plan (Appendix H) was submitted by Ebasco Constructors Inc. and was approved by Morrow County on November 6, 1993.

Hazardous materials would be handled on-site and transported to the site according to applicable Federal and state requirements and the Spill Prevention Control and Countermeasure Plan (SPCC Plan). Accidental release or spill of hazardous materials is unlikely, and no adverse impacts to protected areas are expected.

Groundwater - Water needs and planned sources for the Coyote Springs Plant were described on pages 3-10 and 3-11. Existing permitted Port of Morrow wells will supply the plant. Carlson Sumps 1 and 2, and Port Well #3, alluvial aquifer wells, will provide 7.2 m^3/m (1910 gpm), a majority of plants water needs. Port Well #4, an existing deep basalt well, will provide 2.9 m^3/m (758 gpm). Water withdrawals from these wells were transferred from irrigation or industrial use in order to serve the Coyote Springs Plant. Well withdrawal rates to serve Coyote Springs will not increase from their present rates. The City of Boardman has agreed to provide a back up supply of 7.6 m^3/m (2,000 gpm) of water for Coyote Springs from their Ranney Collector (also alluvial).

The alluvial aquifer transmits water quickly and impacts from pumping are generally very localized. The rate of water withdrawals from the alluvial wells will not increase from existing levels due to the Coyote Springs Plant. Thus no significant changes in groundwater levels are expected due to alluvial groundwater pumping for the plant (CH2M Hill, 1994).

The hydrologic connection between the alluvial aquifer and the Columbia River creates a condition in which pumping from alluvial wells to serve the Coyote Springs Cogeneration Project could reduce flows in the Columbia River. The maximum water demand of the plant was calculated and is equivalent to a 0.17 cms (6 cfs) reduction of groundwater inflow to the John Day pool of the Columbia. Considering that flows in the John Day pool average over 8,495 cms (300,000 cfs), a 0.17 cms (6 cfs) reduction in flow is not significant.

Pumping from Port Well #4, which draws from the deep basalt aquifer, could cause a long-term reduction in the groundwater level. If unacceptable impacts due to pumping from Port Well #4 are observed in the future, the Oregon Water Resources Department (**OWRD**) has the authority to limit further appropriations and reduce the total pumping demand based on seniority of water rights. This authority has been exercised at the Ordinance Critical Groundwater Area (**OCGA**) which is located east of the Boardman near Hermiston. The OWRD is not considering expanding the OCGA. The City of Boardman's Ranney Collector (alluvial) provides a 7.6 m^3/m (2,000 gpm) backup water supply should withdrawals from the deep basalt aquifer be restricted.

In summary, no direct adverse impacts to groundwater are attributed to the Coyote Springs Plant. See section 5.1.4 for a discussion cumulative groundwater Impacts.

Impacts to groundwater from accidental spills of toxic or hazardous substances will be minimized through PGE's SPCC Plan which will be completed 90 days prior to operation of the plant.

Air Impacts - Cogeneration Plant

The Oregon DEQ issued an Air Contaminant Discharge Permit to PGE for the Coyote Springs Plant on April 6. 1994. A copy of this permit is in Appendix F. The permit imposes a variety of conditions and limitations on operation of the project. Air emissions and resulting impacts predicted are described in the following pages and tables.

Turbine and auxiliary boiler operations would generate significant quantities of NO_x and CO as well as lesser quantities of particulate matter, sulfur dioxide and VOCs. (See Table 5-2.) The quantity of pollutants emitted from the turbines would vary with ambient air density and load conditions; the denser the air and the greater the load, the greater the emissions. Emissions from the auxiliary boilers are more consistent and vary only with load. Worst case emission rates are expected to occur in the winter because cold air is denser than warm air and because the load is higher in the winter. The values presented as Plant Site Emission Limits in Table 5-2 reflect worst case operating conditions. Varying emission rates (including worst case) were used to predict impacts to existing air quality.

Impact of criteria pollutants emitted from the proposed facility were evaluated under the Prevention of Significant Deterioration/New Source Review process. Several criteria pollutants such as volatile organic compounds, sulfuric acid and beryllium are exempt from PSD process for this facility because they would be emitted in small quantities. Two EPA-approved Gaussian

dispersion models (ISC2ST and COMPLEX1) were used to predict the proposed facility's impacts on the Boardman airshed. Impacts were predicted for oxides of nitrogen, carbon monoxide, particulate matter, ammonia and formaldehyde. The emission points considered were the two 64 m (210 ft.) high turbine stacks, and the 56 m (185 ft.) high stack serving the two auxiliary boilers. Impacts were predicted for emission rates reflecting various loads. For each load condition, three separate model runs were made, one for each of the representative ambient temperatures -5.3°, 11.6°, and 29°C (22.5°, 52.8°, and 85°F). EPA screening meteorological conditions and additional wind speed/stability category combinations suggested by DEQ were used for all modeling runs. Mixing heights were set equal to worst case conditions as determined by the EPA SCREEN dispersion model. The models receptor grid extended approximately 21 km (13 miles) from the proposed facility. Receptors were spaced at 500-m (1,640-ft.) intervals except for fenceline and maximum impact receptors (around Canoe Ridge, Washington), which were spaced at 100-m (328-ft.) intervals.

Table 5-2
Potential Annual Emissions of Criteria Pollutants

ID	Description	Maximum Operating Hours[a]	Pollutant	Emissions		Total tons/yr.	Combined Total tpy[b]
				ppm	lb./hr.		
1 2	HRSG A & HRSG B Stacks	8,760 each	NO_x	4.5	30	130	260
			CO	15	49	215	430
			SO_2	NA	1.09	4.8	10
			TSP/PM_{10}	NA	9	39	78
			VOC	.4	3	13	26
3	Aux Boiler A & Aux Boiler B Common Stack	8,760 each	NO_x	40	17.7	77.5	155
			CO	200	58.6	257	513
			SO_2	NA	0.22	0.96	2
			TSP/PM_{10}	NA	1.84	8.06	16
			VOC	10	1.66	7.27	15

a. Expected operating hours:
   1. HRSG emissions - 7,760 hours/year/unit.
   2. Auxiliary boilers - 1,000 hours/year/unit.

   Note: There may be cases where one turbine and one auxiliary boiler would operate simultaneously. However, the emissions from this operating scenario will not exceed the case where just two turbines are operating simultaneously.

b. Underlined values are proposed annual plant site emission limits (PSELs). Figures are rounded off to the nearest whole number.

NA - not applicable.

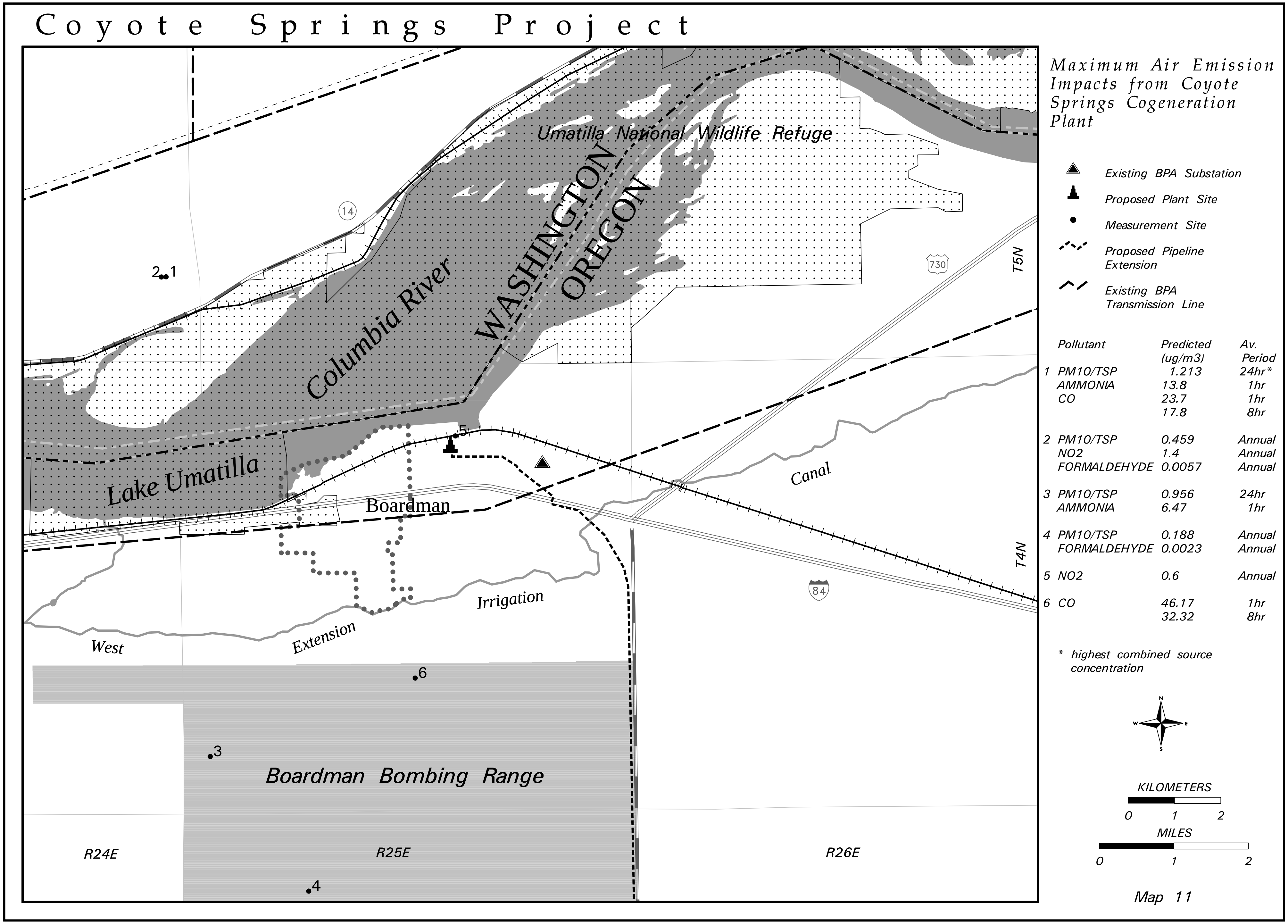
Maximum predicted ambient concentrations due only to proposed facility emissions are shown on Map 11. Canoe Ridge, 7.2 km (4.5 miles) northwest of the proposed facility in Washington, had the highest predicted impacts. Ambient concentrations on Canoe Ridge were predicted to be: NO_2 1.4 ug/m³ (annual average), PM-10 1.2 ug/m³ (24-hour average), CO 23.7 ug/m³ (1-hour average), ammonia 13.8 ug/m³ (1-hour average) and formaldehyde 0.0057 ug/m³ (annual average). The EPA NO_2 Significant Impact Level (40 CFR 51.165 (2) b (2)) is exceeded in Washington. Exceedance of the NO_2 significant impact level triggers the requirement for more comprehensive modeling of other competing NO_2 sources in the airshed (see discussion below). Predicted ambient concentrations of other priority pollutants did not exceed state or Federal significant impact levels, indicating that emission of these pollutants from the proposed facility would not significantly impact existing air quality. The maximum predicted PM-10 concentration in Oregon (0.956 ug/m³ - 24-hour average) approached the Oregon Significant Impact Level of 1 ug/m³ (OAR 340-20-220). Also note that the maximum Washington 24-hour PM-10 concentration (1.2 ug/m³) exceeds the Oregon significant impact level. See Map 12 for NO_2 contours and locations of maximum impact.

NO_2 competing-source modeling was accomplished for 37 significant NO_2 sources in the region, including two natural gas-fired cogeneration plants proposed for the Hermiston area. Competing-source modeling determined the amount of PSD increment remaining in the airshed after all proposed facilities are operational. The modeling also determined if the NAAQS would be exceeded. The entire airshed, with existing and proposed sources, would consume 13.6 percent of the available 25 ug/m³ NO_2 increment. PGE's Boardman Coal Plant and the NW Pipeline compressor station in Benton County, Washington 25 km northeast of Boardman are included in the computer modeling, but do consume increment because they were built prior to EPA's PSD regulations. The amount of NO_2 increment consumed by the Coyote Springs facility is 1.16 ug/m³. The maximum combined impact of the proposed facility and the 37 other NO_2 sources including the Boardman Coal Plant but not the compressor station, was predicted to be 31.4 ug/m³ NO_2 (annual average), occurring 500 m (1,640 ft.) southwest of the proposed facility. DEQ has determined that this area's background NO_2 concentration is 30 ug/m³. The predicted NO_2 combined impact (31.4 ug/m3) coupled with background concentration gives a total maximum impact of 61.4 ug/m³. The NAAQS NO_2 standard is 100 ug/m³.

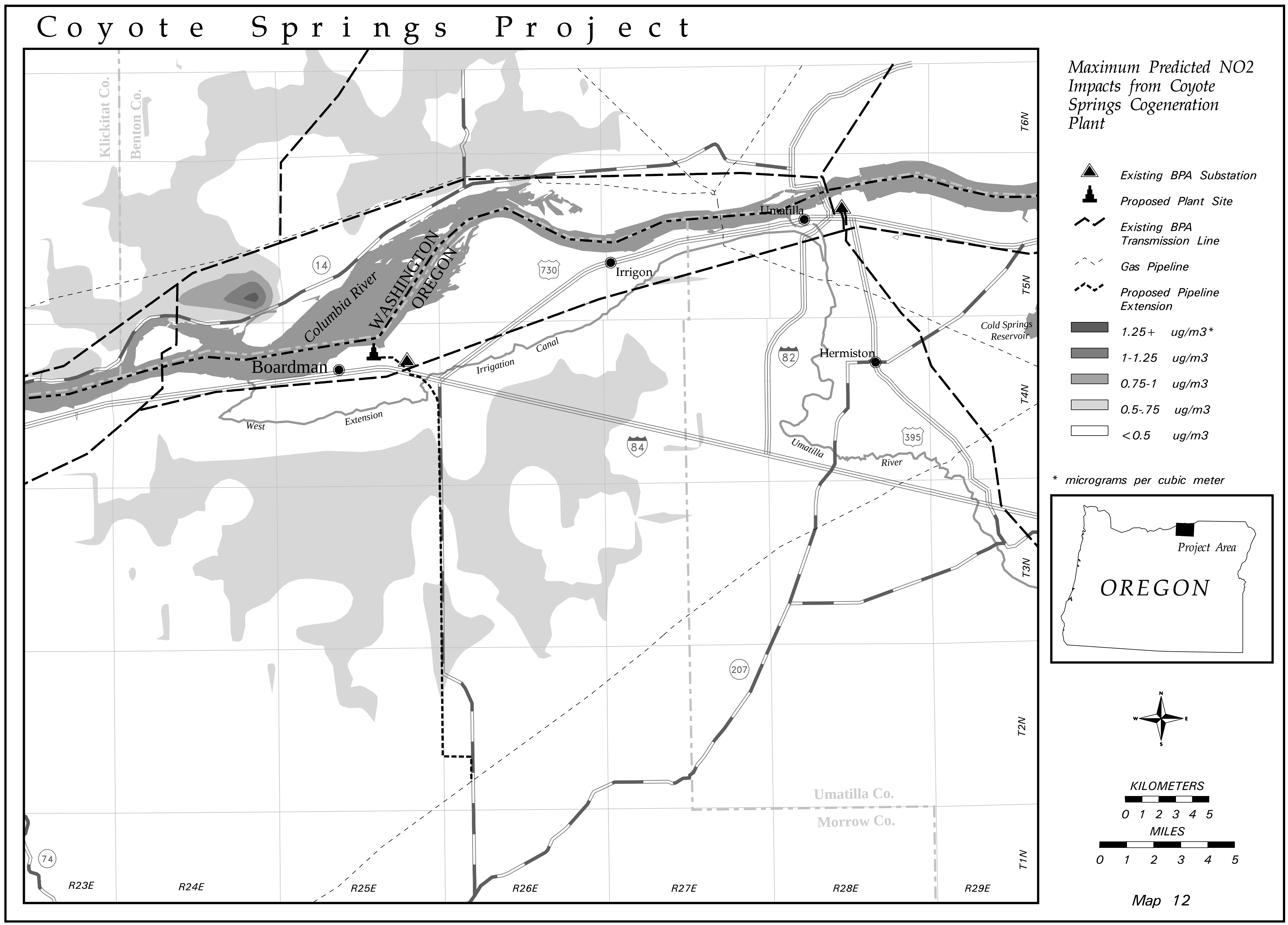
Chester Environmental also performed combined source modeling which included both the compressor station and the Boardman Coal Plant. With the compressor station, the highest predicted NO_x impact was located near the compressor station and was 485 ug/m³. The Coyote Springs Plants contributes only 0.135 ug/m³ (or 0.03 percent) to this total.

The NAAQS are designed to protect human health and the environment. Because none of the NAAQS would be exceeded in the Boardman airshed because of the proposed project, no measurable effects to local vegetation, soils, wildlife or human health should be expected to occur as a direct result of facility emissions. The NAAQS are exceeded in the vicinity of the compressor station. This exceedence may be affecting local vegetation/wildlife, however the proposed facility has insignificant impacts on this area's air quality.

Map 11. Maximum Air Emission Impacts from Coyote Springs Cogeneration Plant.



Map 12. Maximum Predicted NO2 Impacts from Coyote Springs Cogeneration Plant.



Odor - Ammonia is the only pollutant emitted from the proposed facility in significant quantity to possibly pose an odor problem. The highest predicted one hour ammonia concentration in Oregon was 6.47 ug/m^3**,** and 13.8 ug/m^3 in Washington, which are below the odor threshold for ammonia (26.6 ug/m^3). No odor impacts are expected.

Class I Areas and National Scenic Areas - The Valley screening mode of COMPLEX1 was used to predict the potential impacts to Class I areas. Modeled impacts were well below PSD Class I increments for all criteria pollutants and below detection limits in most cases. Model predictions indicate that there would be no measurable impacts to these sensitive areas from the criteria pollutants emitted by the proposed facility.

Effects of NO_2 on plant life in these Class I areas were also considered. Maximum modeled impacts of NO_2 are at least two orders of magnitude below the U.S. Forest Services' *No Impact Level* for lichen and all plant species. Impacts on aquatic resources in Class I areas are also expected to be nondetectable.

EPA-recommended visibility analysis model VSCREEN was used to evaluate the visibility impacts of the proposed facility on nearby Class I areas. Modeled results predict that the proposed facility would not adversely degrade visibility in the nearby Class I areas or in the Columbia Gorge Scenic Area.

Because no protected area is closer than 6 km (4 miles) to the proposed plant, no significant impacts are expected.

Air Toxics - Chester Environmental estimated emission rates of air toxics from the proposed facility (see Tables 5-3 and 5-4). Emission rates for the boilers and the turbines were derived from one of two methods: the California Air Resource Board Speciation Manual, or by using emission factors based on heat input published in EPA's *Toxic Air Pollutant Emission Factors* (EPA-450/290-011). Ammonia emission rates were provided by the selective catalytic reduction unit vendor (Peerless). Emissions from the cooling tower were calculated using mass balance techniques.

Calculated emission rates were compared to DEQ's significant emission rates. Dispersion modeling must be performed for all compounds emitted from new sources which exceed these rates. Dispersion modeling predicts the pollutants' ambient concentration. From this prediction an estimate of the environmental impacts can be made. Emissions less than the specified significant emission rates are presumed to have an insignificant effect on the environment. Only two toxic compounds were found to exceed the significant emission rates: formaldehyde and ammonia. Ammonia generated from the selective catalytic reduction unit is estimated at 434.4 tonnes (427.5 tons/year). Formaldehyde, a by-product of natural gas combustion, is estimated at 1029 kilograms (2,269 pounds)/year. Impacts from these two pollutants were modeled using an EPA-approved model (ISC2).

Table 5-3
Emission Rates for Known and Suspected Carcinogenic Pollutants

Pollutants of Concern	Total Emissions Firing Turbines[a] (lb/yr)	Total Emissions Firing Auxiliary Boilers[b] (lb/yr)	Total Emissions Firing Both (lb/yr)	DEQ Significant Emission Level (lb/yr)
Benzene	174	234	408	3,100
Formaldehyde	1,716	553	2,269	2,000

a. Assumes 7,760 hours/year/turbine multiplied by emission rate (lb/hr) in Table 5-3.
b. Assumes 1,000 hours/year/boiler multiplied by emission rate (lb/hr) in Table 5-3.

The highest predicted formaldehyde concentration in Oregon was 0.0023 ug/m³, at a location on the bombing range approximately 10 km (6.2 miles) south-southwest of the proposed facility (see Map 11). At this low level the only concerns are long-term health effects such as cancer. This concentration has an associated cancer risk of 2.49 x 10^{-8}, nearly two orders of magnitude less than EPA's acceptable risk level of one in a million (1 x10^{-6}) excess cancer cases. The highest formaldehyde concentration in Washington was 0.0057 ug/m³ at a location on Canoe Ridge (see Map 11). Formaldehyde emissions would not harm plants or animals.

The maximum predicted one hour ammonia concentration in Oregon was 6.47 ug/m³ at a location on the bombing range approximately 8 km (5 miles) southwest of the facility. This one hour impact corresponds to a 4.5 ug/m³ 8-hour average. Oregon's acceptable ambient concentration for ammonia is 170 ug/m³ (8-hour average). The maximum ammonia concentration in Washington was 13.8 ug/m³ (1-hour average) at a location on Canoe Ridge. Washington's Acceptable Source Impact Level for ammonia is 59.9 ug/m³ (24-hour average) and 0.077ug/m³ (annual average) for formaldehyde. Both the Oregon and Washington maximum predicted ammonia impacts are an order of magnitude below state safety thresholds and an order of magnitude below the inhalation ***No Observed Effects Level (NOEL)*** (Integrated Risk Information System December 1993). Maximum predicted ammonia concentrations would not adversely effect animals or plants. Maximum impact locations are presented on Map 11.

Table 5-4
Emission Rates for Non-Carcinogenic Pollutants

Pollutants of Concern	Total Emissions Firing Turbines[a] (lb/8 hr)	Total Emissions Firing Auxiliary Boilers[a] (lb/8 hr)	DEQ Significant Emission Level (lb/8 hr)
Ammonia (NH_3)	390.4	0	31
N-Butane	2.04	4.7	3,500
Cyclohexane	0	0.50	1,920
Hexane	0	0.5	3,210
N-Pentane	0.2016	3.1	3,300
Pentane	0.2016	4.7	3,300
Toluene	0	0.9	685
Chromium (Cr)	0.07	0	0.9
Cobalt (Co)	0.07	0	0.09
Copper (Cu)	0.07	0	2
Manganese (Mn)	0.07	0	6
Mercury (Hg)	0.00	0	0.2
Nickel (Ni)	0.07	0	2

a. Based on converting emission rates in Tables 7-1 and 7-2 to lb/8 hr. Emissions presented are from both turbines

Air Impacts from the Cooling Tower - An analysis of potential cooling tower drift effects is in Appendix I. Air toxins emitted from the cooling tower are presented in Table 5-5. All listed pollutants are emitted in small quantities and no impacts are expected to result from their release. Tolyltriazole, acrylate copolymer and potassium hydroxide are chemicals are corrosion/deposit inhibitors. Potassium Hydroxide, tolyltriazol and acrylate copolymer are not assigned Oregon significant emission rates, Washington acceptable source impact levels or Oregon acceptable ambient concentrations. However, Washington's acceptable source impact level for potassium hydroxide is 6.7 ug/m^3-24-hour average.

A hard-water mist, 5.0 liters (1.32 gal.)/minute with 2400 mg/L total dissolved solids would be emitted from the cooling tower. The volume of mist and distance the mist would travel before evaporating or condensing would vary with ambient temperature and humidity. Less mist would be emitted on cold, moist days than on warmer days. During damp, cold periods, the mist emitted would condense and deposit relatively close to the tower. During sunny, hot weather the mist would rapidly evaporate and disperse into the atmosphere.

Fogging would take place during cold moist periods and is expected to occur occasionally on Ullman Boulevard west of the plant but is not expected to occur on I-84. On average, the mist is expected to evaporate within 305 m (1000 ft.) of the tower, leaving behind a small amount of dissolved solids to disperse as particulate matter 130 kg (280 lb). (PGE, 1993.) Moisture emitted from the cooling tower which condenses and impacts the ground is called drift. Drift from the cooling tower would amount to one gallon/minute. The dissolved solids would contain small amounts of iron, silica, arsenic and barium (see Table 5-5). In addition, small amounts of tolyltriazole, acrylate copolymer and potassium hydroxide (corrosion inhibitors/ deposit control agents) would be emitted. The small amount of pollutants emitted from the tower would have no impact on the Boardman airshed.

Air Impacts from Construction Operations - Emissions generated during construction of the proposed facility would originate from temporary fuel oil tank(s), construction equipment, fugitive dust, and vehicles used by workers to commute to the site. Vehicle exhaust connected with construction operations would be insignificant compared to exhaust generated by traffic on I-84, located directly south of the proposed facility. Fugitive dust generated by construction operations would be minimized by soil wetting on an as-needed basis. Though dust would be controlled, there is expected to be some adverse, but short-term effects on local air quality during the early phases of construction.

Global Warming - Gases thought to contribute to global warming are commonly referred to as "greenhouse" gases. Greenhouse gases include: CO_2, methane (CH_4), nitrous oxide (N_2O), NO_x, non-methane VOCs and stratospheric ozone depleting substances such as chlorofluorocarbons.

Table 5-5
Calculated Cooling Tower Emissions

Chemicals	Water Concentration (mg/L)	Air Emissions (tons/year)	DEQ Significant Emission Rate (tons/year)	Oregon Air Regulations Citation
Total Dissolved Solids	2084	6	15 (jPM-10)	340-20-225
Total Suspended Solids	5.3	0.02		
Calcium	779	2		
Magnesium	476	1		
Sodium	205	1		
Iron	1.9	0.01		
Copper	ND	ND		
Zinc	ND	ND		
Chloride	168	0.49		
Sulfate	1085	3		
Phosphate	15.7	0.05		
Silicate	149	0.43		
Potassium	19.2	0.06		
Nitrate	9.8	0.03		
Antimony	ND	ND	5	340-32-450
Arsenic	0.042	0.0001	0.005	340-32-450
Barium	0.49	0.001		
Beryllium	ND	ND	0.008	340-32-450 (0.0004 in 340-20-225)
Cadmium	ND	ND	0.01	340-32-450
Chromium	ND	ND	5	340-32-450
Lead	ND	ND	0.6	340-32-450 (same in 340-20-225)
Mercury	ND	ND	5	340-32-450 (0.1 in 340-20-225)
Nickel	ND	ND	1	340-32-450
Selenium	ND	ND	1	340-32-450
Thallium	ND	ND		
Acrylate Copolymer	10.2	0.03		
Tolyltriazole	3.9	0.01		

ND - not detected.

The quantity of CO_2 emitted when fossil fuels are burned is proportional to the carbon content of the fuel. The more carbon present, the more CO_2 emitted. The proposed plant would use natural gas to fire the combustion turbines. Natural gas is primarily composed of methane, which contains one carbon atom and four hydrogen atoms. Because of its low carbon content, natural gas combustion produces about 40 to 50 percent less CO_2 than coal and approximately 25 percent less than petroleum products (Cornot-Gandolphe, 1993).

As mentioned above, the plant would use methane to fire the turbines. Methane is at least 20 times more potent a greenhouse gas than CO_2. Because of this, it is important to keep methane releases to a minimum. Methane emitted from the world's natural gas pipelines and natural gas mining operations is less than 10 percent of methane emitted from natural sources such as tundra, swamps, forest floors, termites and cows (Sheppard, et al., 1982). In addition, most natural gas leaks occur within residential distribution systems and not in wholesale distribution systems such as the one linked to this plant. New techniques have virtually eliminated methane escape during drilling.

The source of natural gas for the proposed cogeneration plant is from actively producing gas fields in Alberta and British Columbia, Canada. The number of natural gas wells that would be needed to supply PGE requirements was estimated by PGT. The average total yield of Canadian natural gas wells was divided into the total requirements of the Coyote Springs Plant (41 billion BTUs per day). Using this method, the output of 16 gas wells would be used each year by the Coyote Springs Plant (PGT, 1993). For perspective, 4,000 Canadian gas wells were drilled in 1991 and the total number of wells in Canada number in the hundreds of thousands (PGT, 1992). Thus the Coyote Springs Plant would use only a small amount of gas compared to that available in Canada. The world's proven reserves are expected to last approximately 58 years at the present consumption rate (*Inside Energy/with Federal Lands, 1993*).

Emissions of NO_x from the facility would be controlled by best available control technology.

Reducing greenhouse gas emissions also involves energy conservation. If less fossil fuel is consumed, fewer pollutants are generated. Cogeneration facilities are considered energy efficient because excess steam generated from power production is used by nearby industries that would otherwise generate their own steam, which would consume energy.

President Clinton has committed the United States to reducing its greenhouse gas emissions to 1990 levels by the year 2000. The Clinton administration has issued a Climate Change Action Plan to accomplish this objective. The plan encourages the use of natural gas as opposed to other fossil fuels, for power generation, energy conservation measures, and reforestation projects. Currently, PGE does not plan to offset plant CO_2 emissions with reforestation.

In summary, the proposed plant's comparatively low CO_2 emissions, the gas industry's low percentage of losses in the wholesale gas distribution system, the plant's control of NO_x and N_2O emissions, and the facility's cogeneration capability combine to minimize the plant's global warming impacts. However, plant impacts could be further reduced by reforestation.

Acid Rain - SO_2 and NO_x are the main precursors to acid rain. The proposed facility would emit significant quantities of NO_x but not SO_2. NO_x emissions are being minimized by selective catalytic reduction. The selective catalytic reduction process not only reduces NO_x emissions, it also releases ammonia into the atmosphere. Ammonia has the capacity to act as a buffer and helps minimize nitric acid (acid rain) formation. Because of these factors, the proposed plant is not expected to significantly contribute to downwind acid rain.

Photochemical Pollutants - NO_x and VOCS emitted from the proposed facility can form other pollutants in the presence of sunlight. During stable atmospheric conditions, when sufficient quantities of ultraviolet light are present, NO_x can form detectable levels of tropospheric ozone, peroxyacetal nitrate and peroxybenzoyl nitrate, which are respiratory and/or eye irritants at elevated concentrations. In addition, these pollutants, along with NO_2, form aerosols that reduce visibility and give the atmosphere a brownish cast. Most volatile organic compounds emitted from the facility can form ozone in the presence of ultraviolet light. Volatile organic compounds are not emitted in large enough quantities to form detectable levels of ozone. Photochemical pollutants from plant emissions are expected to have a negligible impact on the Boardman airshed and no detectable impact on human health.

There are several reasons why photochemical pollutants would not accumulate in this area: (1) this area is rural and does not generate many pollutants, (2) at this latitude, high angle radiation necessary for photochemical pollutant formation only occurs during a short period of the year, (3) wind channeling by the Columbia River prevents pollutant build up, and (4) stable atmospheric conditions (necessary for pollutant buildup) only occur in this area approximately 5 percent of the year, predominately during night and early morning hours when UV radiation is absent or at too low of an angle to generate photo chemical pollutants (Thorkildson, 1993). Aerosols formed from photochemical pollutants and NO_2 may have some impact on local visibility during stable atmospheric conditions.

Vegetation/Wetland Impacts - Cogeneration Plant

Appendix I presents an analysis of potential cooling tower drift effects on water quality and vegetation. Impacts to wetland plant communities are not expected to be significant.

Socioeconomic Impacts - Cogeneration Plant

The construction, operation and maintenance, and eventual decommissioning of a major cogeneration facility can create both short-term and long-term impacts on the social and economic resources in a community. Socioeconomic impacts have been separated here into short-term impacts (preconstruction/construction/maintenance and decommissioning) and long-term impacts (facility operation). The study area to identify these impacts includes portions of Morrow and Umatilla counties in eastern Oregon.

Short-term socioeconomic impacts would include those impacts associated with construction of the proposed project, so-called "boom/bust" effects. Long-term impacts would include impacts on population, housing, employment, and impacts on local government services and infrastructure such as schools, health care, library services, solid waste disposal and water and sewer services.

It is difficult to forecast the short-term socioeconomic impacts related to large construction projects in rural areas. Uncertainties such as labor disputes, material shortages or weather-related problems may affect the peak level of the number of construction workers. Construction employment is the key variable affecting socioeconomic impacts for the short term.

Other impacts could include secondary impacts on the local economy, such as an increase in the supply and demand for goods and services, which could affect the price of these goods and services; an increase in crime with an increased population; and the temporary disruption to the agricultural resource from crop disturbances. Secondary impacts related to the construction work force are expected to be minor.

Increase in Tax Revenue - Construction and operation of the proposed project would significantly improve the assessed value of taxable property in Morrow County, and increase the local property tax revenues received by Morrow County. With PGE's capital investment of between $150 and $300 million depending on whether the utility constructs one unit or two, the assessed value of real property within the county would be expected to increase from 20-40 percent. BPA, as a Federal agency, pays no local property taxes so no revenue would be received by the county from BPA's new transmission facilities. BPA's investment in the proposed project, however, is negligible.

The proposed project is within Morrow County tax code area 25-04, one of 33 tax code areas within the County. The current tax rate (for tax year 1993/94) for this tax code area is $21.24. The actual ad valorem taxes that can be collected under Oregon's Measure 5, has been reduced to $17.85/per thousand of valuation (for this particular tax code area) for tax year 1993/94. Assuming the first tax year that the proposed plant would be assessed property taxes would be tax year 1995/96, the maximum amount that could be collected for the Morrow County School District would be $5.00 per thousand, plus any bonded indebtedness, and $10.00 per thousand for general government, plus any bonded indebtedness. Bond levies are unaffected by Measure 5.

Property taxes generated by the proposed plant would likely range between $750,000 and $1,500,000 annually (in 1993 dollars) for the Morrow County School District, and between $1,500,000 and $3,000,000 for general county government, plus any bonded indebtedness, depending on whether PGE completed one or both units. Tax revenue received by the County would be shared with the City of Boardman (Sweek, August 1993).

Although the new revenue would be a significant increase in the amount of local taxes received by the county, it is doubtful, according to the Oregon Department of Revenue, that the increase would have the effect of reducing individual tax burdens, due in part to limitations placed on individual taxing districts by Measure 5. New revenue could reduce individual taxes, however, if the total amount collected exceeded the amount required by individual taxing entities (Oregon Department of Revenue, August 1993).

Although the state does not receive any property tax revenues generated at the local level, the state would likely benefit from the proposed project because the state's contribution to Morrow County School District, if any, as a result of the reductions required under Measure 5, are likely to be less with the plant than without it. The state needs to make up the difference of what is collected under Measure 5, and the actual cost of operations of the Morrow County School District, as well as the other 266 school districts in Oregon. Differences have not been computed, because of the number of unknown variables.

Population - The proposed project is not expected to add significantly to the area's population. Assuming half of the permanent jobs come from outside the local area, an added 12 employees and their families would relocate to the area. Assuming 2.5 persons per household, this increase would be 30 individuals. Since this would be a population increase of less than 1 percent of Morrow County's population, there would be a negligible impact to the local population.

Employment - Construction of the proposed plant would likely take place over an 18-month period beginning in 1994. Construction of the power plant and attached substation/switchyard would peak with about 200 construction workers (Mayson, August 1993). In addition, about 130 construction workers would be required to construct the gas transmission line required to serve the facility, and another 20-25 construction workers would be required to construct BPA's portion of the project. While construction of the gas transmission line is expected to last five to six weeks (PGT, May 1993), construction of BPA's portion of the project is expected to be completed in one month or less.

As many as 355 construction workers are expected to work on various portions of the project, but not at the same time. While the three projects are expected to be constructed concurrently, peak employment could reach a total of 355 workers, depending on whether the peak period for the construction of the power plant coincides with construction of the gas pipeline. Because of the number of variables involved, it is difficult to accurately predict the actual number of construction workers in the area during the peak construction period.

Plant operation is expected to create about 20-30 full-time positions over the life of the facility. Three shifts are anticipated to be necessary to operate the plant: 16-20 workers during the day shift, and the remainder during each of two subsequent shifts. While this level of employment would not be considered to be a significant impact on the local area's employment base, due to the existing size of the labor force (28,000), it is considered a positive impact on employment in the local area.

Housing - The influx of non-local construction workers would likely affect the demand for temporary housing facilities in the local area. Construction of the proposed project and related facilities would require 355 workers, most likely from outside the local area. Construction is anticipated to begin in 1994 and be completed in 1995.

It is difficult to predict where construction workers would come from in advance of the award of a construction contract. It is assumed most craft workers would originate from the Tri-Cities area of southeastern Washington. Most individuals would likely commute to Boardman daily. Some of the workers would come from the local area. Some craft workers and laborers would be found in the local labor force. Craft workers would leave when their work is accomplished, to be replaced by other crafts persons. Not all of the construction work force would be present in the area at the same time.

A sufficient supply of temporary housing exists in the area to provide for the temporary housing needs of the non-local construction workers and their families. Because all facilities would likely be constructed concurrently, the vacancy rate is expected to be low, especially during the summer months of 1994-95.

The 1990 Census identified nearly 800 vacant units of rental housing (including both apartment units and single-family structures) in Morrow and Umatilla counties. In addition to these housing units, there are 11 motels that supply about 490 motel rooms in the Hermiston, Umatilla, and Boardman area. There are 20 mobile home parks in the Pendleton, Milton-Freewater, Umatilla, and Hermiston area, with seven RV/mobile home parks in the Hermiston area alone. All are within 70 km (45 miles) of the City Boardman. According to the Electric Power Research Institute (EPRI), which studied socioeconomic impacts from power plant construction and operation, including the Boardman power plant, construction workers frequently commute up to 97 km (60 miles) daily to project sites.

The City Manager of Boardman believes the 200-person construction workforce would create no problems for the City of Boardman. Mobile home parks and motels in the City, and the City itself, have been preparing for the influx of construction workers. (Palmer, 1993.)

Impact on Essential Government Services - Cogeneration Plant

Law Enforcement - Although the proposed project would likely increase the demand for law enforcement services over the life of the project, the Sheriff's Office does not feel this project alone would cause the county to hire additional law enforcement personnel (Morrow County Sheriff's Office, August 1993). Additional property tax revenue expected to be apportioned to the County Sheriff's Office from this project should offset any added costs caused by the proposed project.

Fire Protection - The facility would be designed to meet the code requirements of the UBC, as amended, by the state of Oregon and the National Fire Protection Association (NFPA) Standards. In addition, each gas turbine generator enclosure is protected by a self-contained, low pressure, CO_2 fire protection system. Various sensors would be provided as part of the system to automatically actuate the CO_2 fire protection system. An existing 7,600 m^3 (2 million gal.) water tank about 1 km (0.6 mile) south of the proposed site would also be available for fire suppression.

The permanent on-site work force would be trained in hazardous materials training, as are Boardman Rural Fire Protection District personnel (PGE, 1993).

Water Service - The Port will serve the water needs of the Coyote Springs Project from existing permitted wells. The Port estimates that there is approximately 3.8 m^3/m (1,000 gpm) of undedicated capacity available. The City of Boardman will supply up to 7.6 m^3/m (2,000 gpm) of unused capacity to the Port of Morrow for delivery to Coyote Springs. The City of Boardman has a water right for 61 m^3/m (16,000 gpm) of which only 25 m^3/m (6,600 gpm) is reported to be developed. Thus, the water service capability of the Port and the City of Boardman should not be adversely impacted by Coyote Springs.

Sewer Service - The proposed project is expected to generate about 33 m^3 (8,640 gal.) of sanitary wastewater per day into the City of Boardman's sewage treatment facility. (PGE, 1993.) Wastewater would flow through a 50-cm (20-inch) industrial sewer pipe just south of the proposed plant site. According to the City Manager, the sewer line and treatment facility are sufficiently sized to handle the sanitary wastewater that would be generated by the proposed plant. The City's sewage treatment facility is currently processing about 1136 m^3 (300,000 gal.) per day, with a capacity of 1520 m^3 (400,000 gal.) per day. The additional sanitary wastewater would not adversely impact the City's sewage treatment facility.

Sanitary waste generated during construction of the proposed project would be discharged into chemical facilities. These portable units would be pumped out periodically by licensed contractors into transport vehicles.

Education/Schools - The proposed project would likely impact the Morrow County School District by increasing student enrollment. The school district has recently completed a study that revealed an annual cost increase of $4,500 (in 1993 dollars) for each student added to the existing student enrollment within the district. Because the proposed plant would create an added 20-30 permanent new jobs in the area, not all filled with members of the Morrow County-Umatilla County labor force, it is likely a portion of the new residents would create an increase in the existing student enrollment, and increase district costs.

Because the proposed project would generate a minimum of an additional $750,000 in property tax revenue (in 1993 dollars) to the County-wide school district each year, the proposed project would need to impact the school district by more than 165 students before it would negatively impact the school district's budget (166 @ $4500 = $747,000).

If at least half of the new hires come from outside the Umatilla-Morrow County area, the in-migrants would need to impact the school district with more than an average of eleven students per household (15 x 11 = 165) to create a negative financial burden on the school district. This is unlikely. The proposed project would likely have a beneficial impact on the school district, and the state. Because the state has the responsibility of making up budget shortfalls experienced by school districts across the state, the state would also benefit by the proposed project because its financial responsibility would likely be less.

Library Services - The proposed project would have an impact on the demand for library services offered by the two libraries within the Oregon Trail Library District. The district presently employs four part-time employees, and a full-time director. While the proposed project alone would likely not create the need to hire additional library staff, the additional growth from a portion of the new employees who would relocate to the local area would put an increased demand on library services. This demand, along with the increased demand from growth that would occur because of the plant, would likely create the need for either a new position or an increase in hours worked by existing staff (Oregon Trail Library, August 1993).

The increased property tax revenue received by the library district would likely more than offset any costs incurred by the library as a result of the proposed project. No negative impacts to the library district are anticipated.

Health Care - Health facilities in the local area are sufficiently staffed to handle any medical needs that may arise both for short-term construction personnel and for the increase in the resident population from the proposed project.

Solid Waste Disposal - The proposed plant is expected to generate about 275 kg (600 lb) of solid waste per month. This amount should not create a burden on the Finley Butte Landfill.

Impacts to Other Government Services - Other government services, such as maintenance of the County road system, vector control and the cemetery district, would receive tax revenue that would likely offset any increased costs in services. Though the proposed plant site is outside the City of Boardman, Morrow County government shares tax revenues received with other affected jurisdictions. According to the EPRI study mentioned previously on the socioeconomic impacts from 12 power plants, including the Boardman coal-fired power plant, impacts from the Boardman power plant have been minimal. Some impacts to the school district and to county roads were mentioned, but the report stated that the county road system was in poor repair prior to construction of the power plant and a bond issue had been recently passed to construct two new schools and to expand others within the District (EPRI, 1982).

Impacts to Columbia River Hydroelectric Energy Production and BPA Rates

Reduced Energy Production - It is estimated that the Coyote Springs water withdrawal of 0.17 m^3/s (6 cfs) would have produced 1,000,000 kilowatt hours of electricity annually if allowed to remain in the Columbia River. Assuming the other proposed turbine generators are built and have an equivalent effect, 3,000,000 kilowatt hours of generating capability would be foregone.

Rate Impact - The average value of the lost energy production (1,000,000 kilowatt hours) is assumed to be 60 mills based on 1993 replacement costs. At this rate annual lost revenues would be $60,000. BPA would charge PGE $3-4 million annually for wheeling power from each of the two Coyote Springs units. Thus the Coyote Springs Plant would have a positive impact on rates. BPA uses the following rule of thumb to calculate the impact of expenditures and income on rates: each $100 million dollar change in annual costs or revenues will contribute one mill to BPA's rates. Neither a $60,000 reduction in revenues nor a $6-8 million increase in revenues would have a discernible effect on BPA rates.

Health and Safety Impacts - Cogeneration Plant

Air Emission Impacts to Public Health - The extent and magnitude of toxic air pollutants being released to the atmosphere from the plant were evaluated by Chester Environmental (see pages 5-15-16). Results are summarized in Tables 5-2 through 5-4. The plant would exceed the significant emission rates for NO_x, formaldehyde, a suspected human carcinogen, and ammonia, a non-carcinogenic pollutant. Pollutants exceeding the significant emission rate were modeled for ambient impact. Ambient concentrations of these pollutants pose no human health risks. Modeled ambient impacts of these pollutants are presented in Map 11.

Toxic or Hazardous Materials - A variety of toxic or hazardous materials will be used at the Coyote Springs Plant. A SPCC Plan will be prepared 90 days prior to beginning operation of the plant (PGE, 1994). The following hazardous wastes are expected to be produced from the project:

- Used lead acid batteries
- Spent Selective Catalytic Reduction (SCR) Catalyst
- Oily rags, oil absorbent materials
- Used hydraulic fluids
- Boiler cleaning waste
- Waste oil

Used batteries and spent SCR catalyst are only produced when the equipment has served its useful life and requires replacement. Batteries are used as a source of backup power for plant system controls and safety-related equipment functions. Typical battery life is expected to range from 10-15 years. Used batteries would be shipped to vendor recycling facilities for recycling to minimize the final amount of waste materials requiring disposal at a hazardous waste disposal site.

SCR catalytic systems are used to convert NO_x in the gas turbine exhaust into nitrogen and water vapor. The catalyst system contains heavy metals that are considered hazardous materials. SCR catalysts would be shipped to a hazardous waste disposal facility. The amount of waste catalyst materials generated would be minimized by using clean-burning natural gas and through proper operation and maintenance of system components.

Oily rags and oil absorbent materials would be generated if and when oil spills occur. The plant would be operated and maintained according to rigid written operations and maintenance procedures by qualified and properly trained personnel, which would minimize the potential for oil material spills.

Relatively small quantities of used hydraulic fluids (less than 19 liters [5 gal.] per day) occur on an intermittent basis from routine maintenance and operation functions. These would be stored on-site for periods less than 90 days and periodically shipped to an oil recycling facility.

Following mechanical installation of the boilers, they would be chemically cleaned internally prior to start-up. The cleaning solution would dissolve metallic and other debris created during construction. Boiler cleaning waste would be classified as hazardous. The estimated 152 m^3 (40,000 gal.) of waste solution would be shipped off-site to a hazardous waste disposal facility. This is a one-time waste stream associated with boiler construction.

Waste oil would be generated at the facility from various equipment and plant operations. Sources of waste oil include turbine lube oil system waste oil (oil changes at major overhaul maintenance periods), drains from the natural gas knockout drums, and plant oil/water separators (equipment drains). Only a small amount of waste oil is produced at the plant. Most waste oil comes from maintenance oil changes from the gas turbine and steam turbine generators. Waste oil would be collected in a single underground 23 m^3 (6,000 gal.) storage tank. This size tank would hold a complete lube oil system drained from one of the gas turbine generators. The waste oil would be pumped out by tank truck and trucked off-site to an approved recycling and disposal facility. The underground tank would be of fiberglass double-wall construction to provide corrosion protection and secondary containment. Leakage monitoring would also be provided. (See Tables 3-2 and 3-3 for materials used and stored on-site.)

Electric or Magnetic Fields - The proposed plant would produce some levels of electric and magnetic fields within the plant. Workers in that plant would be exposed to these fields during the course of performing their jobs. Exposure and level duration are unknown.

Because scientific evidence about EMF has not established a cause-and-effect relationship between electric or magnetic fields and adverse health effects, specific health risks, or specific potential level of disease related to exposure to EMF are unknown.

Electric and magnetic field effects are discussed at length under the transmission line impacts discussion on Page 5-38 and in Appendix B.

Visual and Aesthetic Impacts - Cogeneration Plant

Section 4.1.6 discussed the project, impact area visual characteristics, land use designations (visually sensitive), and viewers potentially exposed (see Table 4-7). The following discussion identifies the compatibility or impact of the proposed cogeneration plan with these characteristics. Visual impact findings are based on a field evaluation of visually sensitive sites, and computer-assisted viewshed analysis. Table 5-8 identifies the distance from which the project is seen and the significance of visual impact. Map 9 illustrates the sensitive viewer observation areas which are located in the viewshed . Unless views are blocked by vegetation all areas in the viewshed would see at least part of the project.

The significance of impact (high, moderate, low or none) was determined based on the sensitivity of viewing activity, the degree of visibility (distance), the significance of the viewing area (designated, protected) and the number or type of viewers. The analysis was based on the visibility of the most significant elements of the project, the main turbine built and emissions stacks and transmission towers. The analysis was completed based on the assumption that strobe lights would be put on the stacks to meet FAA requirements.

The methodology used for determining impact significance was interpreted from the threshold distances proposed to BPA in the 1976 study *Measuring the Visibility of H.V. Transmission Facilities in the Pacific Northwest* and the *1986 Cape Blanco Wind Farm Feasibility Study Technical Report No. 7 - Visual.* The thresholds distances used were:

High to Moderate Visibility - 2.2 km (1.4 miles) or less
Moderate to Low Visibility - 2.2 - 6.2 km (1.4 to 3.9 miles)
Low Visibility - 6.2 km - 30 km (3.9 to 18.9 miles)

With the exception of the Columbia River, Lake Umatilla, portions of the Umatilla Wildlife Refuge, I-84, nearby residences and Port work areas, Washington State Highway 14, and the Coyote Springs State Wildlife Refuge, the proposed plant would not be visible or would have only low impact significance on any of the key observation areas identified on Table 5-6 and Map 9. The predominant visual features of the facility would be the 55 m and 64 m (180 ft. and 210 ft.) exhaust stacks, associated steam plumes and the new 500-kV transmission towers. On clear days the stacks and transmission towers could be visible from distances as far as 30.6 km (19 miles). However, their visual impact is reduced in significance by the flat terrain surrounding the site and the large number of trees (Russian olive and cottonwood) in the adjacent area. These trees obstruct views from many of the viewer observation areas. The visual impact is also reduced in significance by the many industrial and transmission structures in the area. In particular, the Boardman Chipping Company facility is a visually dominate feature and tends to attract viewer attention.

Table 5-6
Visual Impact Assessment

Viewer Observation Areas	View Distance	Visible (yes/no)	Designation in Land Use Plan	Impact Significance
Boardman Marina Park	2.4 kilometers (1.5 miles)	Yes (partly screened)	Not Designated	Low
Boardman Research Natural Area	1.5 kilometers (.95 miles)	Yes	Protected Area	Low (partly screened)
Boardman Sailboard Beach	4.0-4.8 kilometers (2.5-3.0 miles)	Yes	Not Designated	Low
Cold Springs Reservoir	38.6 kilometers (24 miles)	No	Designated	None
Cold Springs National Wildlife Refuge	38.6 kilometers (24 miles)	No	Protected Area	None
Horn Butte BLM Area of Critical Environmental Concern	28 kilometers (17.4 miles)	Yes	BLM Designated and Protected Area	Low
Coyote Springs State Wildlife Area	2.9 kilometers (1.8 miles)	Yes	Not Designated but Protected Area	Moderate
Hat Rock State Park	38.5 kilometers (23.9 miles)	No	Designated and Protected Area	None
I-84 Rest Stop (east & west-bound)	6 kilometers (3.7 miles)	Yes	Not Designated	Low
Irrigon Marina Park (ODFW)	19 kilometers (11.8 miles)	No	Not Designated	None
Irrigon State Wildlife Area	19 kilometers (11.8 miles)	No	Not Designated or Protected	None
Lake Wallula	30.6+ kilometers (19.+ miles)	No	Designated	None
Lake Umatilla	.5+ kilometers (.3+ miles)	Yes	Designated	Moderate-Low
Lindsay Grassland	16 kilometers (10 miles)	No	Designated	None
McNary Lock and Dam	30.6+ kilometers (19+ miles)	No	Designated	None
Messner Pond	0.1 kilometers (400 feet)	Yes	Not Designated	Moderate
Oregon Trail BLM Area of Critical Environmental Concern (Bucks Corner)	29 kilometers (18 miles)	Yes	BLM Designated and Protected Area	Low (can see only stack and steam plume)
Power City Wildlife Area	30.9 kilometers (19.2 miles)	No	Not Designated or Protected	None
Riverside High School	1.6 kilometers (1 mile)	Yes (only stack and plume visible)	Not Designated	Low
Travelers on I-84	0.9+ kilometers (.55+ miles)	Yes	Not Designated	High
Umatilla County Scenic-Historic Road	30+ kilometers (18+ miles)	Yes (only stack and plume visible)	Designated	Low-None
Umatilla National Wildlife Refuge	2.4-3.2 kilometers (1.5-2.0 miles)	Yes	Protected Area	Moderate-Low

During certain times of the year when the relative humidity is high, steam plumes may be visible from the cooling tower, HRSG stack, and auxiliary boiler stack. Plumes would be 107-122 m (350-400 ft.) high. Since the proposed facility is in a semi-arid area, the ambient relative humidity is generally low and plumes would only be visible when temperatures fall below freezing. Plumes would be seen until the temperature of the plume declines to the ambient air temperature.

The views of the facility are particularly open from the Columbia River, and the Washington shoreline. There are several scenic viewpoints, boat ramps and wildlife refuge access roads on the Washington side of the river. They would expose viewers to an open panorama of the site. This views across the river and Umatilla Wildlife Refuge would be the most incompatible. The proposed facility would increase the industrial appearance of the wildlife refuge's natural vistas. However, this impact would be somewhat reduced due to the views of the Boardman Coal Plant and stack, which are visible in the background. The plant site would also be highly visible from I-84. Average daily traffic on I-84, 500 m (1,600 ft.) west of the Boardman interchange, totals over 9,450 vehicles a day (1991). The unimproved appearance of the Port property would be accented by the new plant and associated transmission lines. This could leave a negative visual impression to the public traveling on I-84. The exhaust stacks and steam plumes would attract attention and be highly visible.

Figures 4-4, 4-6, and 4-8 (see Section 4) are simulations of what the plant would look like from key vantage points. These photographs were included in PGE's site application and were taken from I-84 south, east, and west of the proposed site. The view from the Boardman residential area should be similar to the views shown on Figures 4-6 and 4-7.

Mitigation - PGE indicated that topographic screening was not practical due to the flat terrain surrounding the site. PGE's conclusions were based on topography or vegetation not being strong visual elements in the site area. However, PGE has proposed several mitigation measures to be used to minimize the visual impact of the plant:

- Paint buildings and exhaust stacks in neutral shades to minimize visual impacts.
- Minimize exterior lighting at night. The minimum number of lights would be used as required by safety standards. The FAA may require aircraft warning lights on the tallest stacks. There is no way to minimize the visual impacts of strobe lights.
- Use native plant materials to enhance the appearance of the site.

Noise Impacts - Cogeneration Plant

Operational Noise - Future noise levels for the plant were calculated by Chester Environmental using a widely used and accepted acoustic computer program called "Noisecalc." Future noise was then compared with DEQ's nighttime standard of 50 dBA for residential sites and with existing noise levels at these sites. DEQ's industrial noise standard takes into consideration existing noise levels at industrial sites when evaluating future industrial noise. Its standard is

either the maximum existing noise level or the speech interference criteria of 55 dBA. The results of the noise analysis are presented in Table 5-7. Locations of noise recordings are shown on Map 4 (follows page 4-2).

As Table 5-7 shows, DEQ noise standards are met at each of the noise analysis sites. Several of the noise analysis sites (2,4, and 5) already experience high noise levels. The cogeneration plant would not worsen this condition. It would be possible to hear the turbine generators' high frequency tonal sound at some of the nearest occupied sites. During east to northeast wind conditions, some locations may experience downwind refraction of sound causing short-term noise increases of up to 10 dBA.

Table 5-7
Future Nighttime Noise Levels

Site	Site Type	Existing Noise (L-10)	Predicted Noise (L-10)	DEQ Standard (L-10)
1	Wildlife Area	51 dBA	57 dBA	62 dBA
2	Industrial Site	51 dBA	44 dBA	55 dBA
3	Residential	50 dBA	39 dBA	55 dBA
4	Industrial Site	56 dBA	41 dBA	55 dBA
5	Residential	57 dBA	31 dBA	50 dBA
6	Residential	50 dBA	30 dBA	55 dBA
		Existing Noise (L-50)	**Predicted Noise (L-50)**	**DEQ Standard (L-50)**
1	Wildlife Area	36 dBA	57 dBA	62 dBA
2	Industrial Site	46 dBA	44 dBA	50 dBA
3	Residential	44 dBA	39dBA	50 dBA
4	Industrial Site	50 dBA	41 dBA	50 dBA
5	Residential	56 dBA	30 dBA	50 dBA
6	Residential	48 dBA	30 dBA	50 dBA

Source: Chester Environmental.

Construction Noise - The exact mix of construction equipment to be used at the plant is unknown. However, experience suggests that certain types of equipment would be used for this type of facility. Table 5-8 lists construction equipment expected to be used to build the plant and the noise levels created by each. The number of each machine used is based on EPA estimates. The usage factor is an estimate of how much time a piece of equipment would be used in an 8-hour work day (expressed as a percentage).

Table 5-8
Construction Equipment Noise Levels

Equipment Type	Quantity	Noise at 50 ft. (dBA)	Usage %
Bulldozer	2	80	40
Road Grader	1	78	40
Back Hoe	1	85	20
Crane	1	84	20
Dump Truck	3	85	40
Paving Machine	1	85	10
Paving Roller	1	85	10
Concrete Truck	2	86	20
Air Compressor	2	81	100
Water Pump	2	76	100

Based on the equipment noise levels at 15 m (50 ft.) and the individual usage factor, a composite noise level at 15 m (50 ft.) of 89 dBA (L_{50}) was calculated by Chester Environmental. This noise level would occur up to 4 hours. Taking into account noise reduction due to distance, noise at Messner Pond (the nearest sensitive site), would be 65 dBA, which is less than DEQ's allowable noise maximum of 68 dBA. Construction noise at the nearest residential site (Site 5) would be under the existing industrial ambient noise, and would be inaudible at Site 3.

Cultural Resource Impacts - Cogeneration Plant

The proposed plant would not be on or within any known historic, cultural, and/or archeological resources. However, site-specific surveys have been performed to check for the presence of historic, cultural, and archeological resources, and provide for any needed protection, recovery, or avoidance. A draft of the survey report is included in PGE's *Application for Site Certificate*.

Protected Resource Impacts - Cogeneration Plant

No impacts to other protected resources are anticipated from the proposed project. The City of Boardman has defined a wellhead protection zone and is developing an Ordinance designed to regulate land use development to protect their drinking water supply. The City of Boardman is confident that PGE will protect the wellhead area.

5.1.2 Power Integration Impacts

Impacts predicted to occur from power integration facilities are summarized in Table 5-9. Narrative descriptions of predicted impacts are provided below.

Land Use Impacts - Power Integration

Construction of the proposed transmission line would alter the land use within the right-of-way from vacant and agricultural to industrial. The proposed transmission line has been sited on land that has been zoned PI (Port Industrial) and MG (General Industrial). Transmission lines are an allowed use in the PI Zone within Morrow County, however, they are not allowed outright in the MG Zone. To site a transmission line in the MG Zone within Morrow County, PGE first needs to obtain a variance from the County to allow this use. The County Planning Department would process the permit quickly once it is received (Seeger, 1993).

The transmission line would parallel the Port access road as it enters/exists the proposed plant over approximately 900 m (1,000 yards). The transmission line would then pass over Columbia Avenue before turning southeast for approximately the same distance before tapping into the existing McNary-Slatt 500-kV transmission line. The applicant would need to obtain a conditional use permit from the county before stringing a transmission line over a public right-of-way. The conditional use permit would specify the minimum clearances required for such use.

Land use restrictions are necessary for land contained within transmission line rights-of-way. Such restrictions would be contained in the easement between PGE and BPA and the Port of Morrow. These restrictions would identify what uses are not allowed within the right-of-way. For example, no structures may be built and no flammable liquids may be stored within a BPA transmission line right-of-way.

Construction of the proposed transmission line across the irrigated agricultural field (circle 53) may cause noxious weeds to spread within the existing field and/or within nearby fields.

Mitigation - PGE would obtain a variance from the county to allow construction of the proposed transmission line in the MG Zone.

PGE would obtain a conditional use permit from the county before stringing a transmission line across Columbia Avenue, a public right-of-way.

PGE would acquire the appropriate easement rights (meeting all BPA easement requirements) from the landowner prior to construction. PGE would assign these rights to BPA.

Noxious weed survey would be undertaken by a qualified individual(s) prior to any earth moving activities taking place.

Natural Resource Impacts - Power Integration

Soils and Geology - Minimal impacts to soils are expected from construction of the substation and tap lines. Determination of soil impacts are based on soil characteristics, topography, vegetation, and presence of erosion elements including water and wind. The proposed project site is nearly flat, dry, and sparsely vegetated. Water erosion is expected to be minimal. Vegetation must be replaced to avoid wind erosion.

Transmission towers would be supported on drilled shaft foundations and the substation equipment would be supported on spread footing foundations. Operating the transmission line and substation would have no impact on site stability.

Water - The substation and transmission line structure locations avoid surface water features. The construction period would be the only period in which water impacts might be caused by power integration facilities. Oregon requires SWPP Plans for construction sites that exceed 2 ha (5 acres), such as the Coyote Springs Plant. This plan would define techniques that would be used to prevent pollution from entering aquatic systems, and prevent wind or water erosion, and ensure that transmission facilities would not adversely affect water resources.

Air Quality - The typically high electric field strength of 500-kV transmission lines causes a breakdown of air at the surface of the conductors called corona. Corona has a popping sound, which is most easily heard during rain storms. When corona occurs, small amounts of ozone and NO_x gases are released. These substances are released in such small quantities that they are generally too small to be measured or to have any significant effects on humans, plants or animals.

Impact Table - Coyote Springs Power Integration (Substation and Transmission Line)

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
WATER				
Resulting from Construction Activities				
Messner Pond	Unlikely	None	NPDES Requirements	DEQ 1200 C
Columbia River	Unlikely	None	NPDES Requirements	DEQ 1200 C
Unnamed irrigation pond	Certain	Slight	NPDES Requirements	DEQ 1200 C
Resulting from Facility Operation				
Degradation of water quality	Unlikely	Slight	City of Boardman's sewa treatment facility	None
Lowering of water table in d aquifer	Possible	Slight	None	(Water Resourc Permit)
Spills of fuel or other hazard materials	Unlikely	Slight	Fulfill requirements of RCRA	None
Fisheries	Unlikely	Slight	Denial of new wells in alluvial aquifer	Water Resource Permit
VEGETATION				
Habitat disturbance	Slight	None	Recontouring and revegetation	None
Wetland vegetation disturbance	Likely	Moderate	Recontouring and Revegetation	None
Sensitive plant species	Unlikely	Unlikely	None	None
WILDLIFE				
Fauna				
Mortality of individuals	Unlikely	Localized	None	None
Temporary displacement	Unlikely	Localized	None	None
Stress in crucial life cycle times	Unlikely	Localized	None	None
Wildlife Habitat				
Wildlife habitat impact	Minimal	Localized	Revegetation	None
FISH				
Mortality/displacement	Unlikely	Localized	None	None
SPECIAL STATUS SPECIES				
None found in project area	None	None	None	None
THREATENED AND ENDANGERED SPECIES (Federally listed)				
Plants				
None found in project area	None	None	None	None

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
THREATENED AND ENDANGERED SPECIES (Federally listed) Cont.				
Wildlife				
Peregrine falcon	Unlikely	Localized durir construction	None	None
Bald eagle	Unlikely	Localized durir construction	None	None
Fish				
Salmon River fall chinook salmon	None	None	None	None
Salmon River spring/summe chinook salmon	None	None	None	None
Salmon River sockeye salmon	None	None	None	None
GEOLOGIC HAZARDS				
Seismic Hazards (Possibilities ground shaking, fault offset, liquefaction, or seismicall induced waves and flooding co affect the integrity of the f	Possible	Project Area	Construct facilities acco to the Uniform Building Code, and the appropriat importance factor for essential and hazardous facilities.	Building Perm
Floodplains	Unlikely	Slight	None	None
SOIL				
Wind erosion due to removal vegetation	Likely	Localized, sho term	NPDES Requirements	DEQ 1200 C
Water erosion due to removal vegetation	Unlikely	Localized, sho term	NPDES Requirements	DEQ 1200 C
LAND USE				
Land use within the right-of will be altered from vacant a agricultural to industrial us	Certain	Slight	None	None
Transmission lines in the Ger Industrial zone of Morrow Cou require a variance.	Certain	Localized	Project developers will s a variance..	Variance
The transmission line will cro public right-of-way.	Certain	Localized	As required in permit	Conditional Use Permit
The transmission line will r certain uses within the righ way.	Certain	Localized	Landowners will be compensated for easeme	None

Table 5-9
Impact Table - Coyote Springs Power Integration (Substation and Transmission Line)

Impact Table - Coyote Springs Power Integration (Substation and Transmission Line)

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
LAND USE (Cont.)				
Construction of the transmis line may cause an infestation noxious weeds in existing nea agricultural fields.	Likely	Localized	A noxious weed survey be conducted by a qualifi individual(s) prior to a construction activities t place. All constructio vehicles will be washe prior to entering and bef leaving construction are	None
CULTURAL RESOURCES				
Historic, cultural and archeol resources	Unlikely	None	Site-specific survey	None
SOCIOECONOMIC				
Construction of proposed pro will increase the demand f temporary housing.	Likely	Local area	None	None
Construction and operation proposed project will increa employment in local area.	Likely	Local area	None-Positive impact	None
RECREATION				
Local recreation sites	Unlikely	None	None	None
VISUAL AND AESTHETIC RESOURCES				
Nearby residences, Washingto Highway 14, I-84, Columbia R portions of the Umatilla Wi Refuge, and the Coyote Spring State Wildlife Refuge.	Likely	Low	Structures will be loca parallel to existing stru if possible. Insulator a tower colors will be mat between lines, etc. Measures will be used t reduce visibility and glar new conductors and towe	None
Other key observation points	Unlikely	Slight	(1) Paint buildings in ne shades to minimize visu impacts. (2) Minimize t amount of exterior lightir night. (3) Use native mat landscaping.	None
PROTECTED RESOURCES				
Oregon DOE designated Protected Resources	Unlikely	Slight	None	None
PUBLIC HEALTH AND SAFETY				
Toxic and hazardous waste (Substation)	Unlikely	Localized	Requirements of SPCC Pl pursuant to the Clean Wa Act	None
Electric fields	Likely	Localized	Safety standards to pre accidental shock.	None
Magnetic fields	Likely	Unknown	Line design to reduce fields.	None

Table 5-9 (continued)
Impact Table - Coyote Springs Power Integration (Substation and Transmission Line)

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
NOISE				
Construction noise	Likely	Moderate, Short-term	None	None
Operation noise (line and substation)	Likely	Localized, insignificant d to existing noi	Special design of transmission lines and transformers to meet n standards.	None
AIR QUALITY				
Pollutants from constructi equipment	Likely	Slight	None	None
Pollutants released during operation	Likely	Slight	None	None
Fugitive dust	Likely	Slight	Water area as needed.	None

Fish and Wildlife Impacts - Power Integration

Fisheries - No fisheries impacts would occur from construction of the electrical transmission line.

Wildlife - Along the electrical transmission line corridor, temporary impacts to wildlife habitat would result from equipment operation to access the transmission tower construction sites, and minimal permanent loss of habitat would occur at the base of the transmission towers. The effect of this habitat loss on wildlife populations is expected to be minor due to the temporary nature of the impact and the small amount of habitat impacted. No excavation would occur except to construct the footings for the transmission towers. Minor amounts of vegetation would be cleared because most of the electrical transmission line route lacks significant vegetation. The proposed mitigation measure to reestablish vegetation (grasses) would provide habitat in areas presently bare. Also, the erection of the transmission towers may provide new perching and nesting habitat for some avian species (e.g., raptors, western kingbird).

Construction activities along the transmission line could also cause disturbance (visual and auditory) and displacement of wildlife from these areas to adjacent areas. Displacement would be temporary and most wildlife would likely return to the area after construction is complete. The degree of this disturbance would depend on several factors including time of year, duration of disturbance, and the species' sensitivity to disturbance.

Mitigation - Electrocution of raptors is unlikely based on the design specifications of the transmission towers, but modifications would be added if warranted to raptor-proof the transmission towers and minimize electrocutions. Because phase-to-phase and phase-to-ground distances of the 500-kV transmission lines and towers are greater than the wing span of eagles and other large birds, electrocution of these species would not be a concern. If, for some unforeseen reason, an individual tower is determined to be a potential hazard, appropriate mitigation measures would be taken (erection of perch guards or modification of the lines as described in Olendorf, et al., 1981) to eliminate the hazard.

Vegetation/Wetland Impacts - Power Integration

Direct but short-term impacts would occur to upland vegetation during construction of the towers.

Socioeconomic Impacts - Power Integration

Socioeconomic impacts for the power integration facilities are minor and cogeneration plant impacts include power integration facilities.

Public Health and Safety Impacts - Power Integration

Toxic and Hazardous Materials - Minimal amounts of hazardous waste would be generated from routine maintenance procedures performed on substation equipment and lines. Kinds and volume of waste would depend on the maintenance procedure and would be the same as that generated at any electrical substation.

Safety Precautions - Power lines, like electrical wiring, can cause serious electric shocks if certain precautions are not taken. These precautions include building the lines to minimize shock hazard. All BPA lines are designed and constructed in accordance with the ***National Electrical Safety Code (NESC)***. NESC specifies the minimum allowable distances between the lines and the ground or other objects. These requirements determine the edge of the right-of-way and the height of the line, that is, the closest point that houses, other buildings, and vehicles are allowed to the line, to limit electric field effects to acceptable levels.

People must also take certain precautions when working or playing near power lines. It is extremely important that a person not bring anything, such as a TV antenna or irrigation pipe, too close to the lines. BPA provides a free booklet that describes safety precautions for people who live or work near transmission lines (*Living and Working Around High Voltage Power Lines*).

Transmission lines can also induce voltages into objects near the lines. This effect can lead to nuisance shocks if a voltage is induced on something like wire fencing on wood posts insulated from ground. Usually this becomes a problem only with lines of voltages above 230-kV. Should problems develop with either high- or low-voltage lines, they can be corrected by simple grounding techniques. For 500-kV lines, grounding of certain objects near the lines is a routine part of the construction process.

Audible Noise Limits - All new BPA lines are designed and constructed to comply with state noise regulations. The new transmission line would meet Oregon's noise standard, 50 dBA.

Electric and Magnetic Fields - BPA recognizes public concern regarding the possible effects of the electrical properties of transmission lines on public health and safety. These effects include electric shocks, noise and potential long-term health effects. In response to the public concern regarding EMF, BPA has taken these steps:

- Developed Interim Guidelines of EMF. These guidelines name EMF as a major decision factor to be considered in locating and designing new BPA facilities.

- Discouragement of intensive uses of rights-of-way. In 1990, BPA revised its right-of-way management practice. BPA no longer encourages new uses in rights-of-way that would increase human exposure to EMF.

- Exposure Mitigation. BPA was among the first to voluntarily adopt practices to mitigate EMF exposures. This means taking reasonable or practical actions that would keep human exposure to new sources of EMF as low as reasonably available.

All BPA lines and electrical facilities are designed and constructed in accordance with the NESC to minimize electrical shock hazards. New BPA lines are also designed and constructed to comply with Oregon's electric field strength standard of 9 kV/m maximum on the right-of-way. This project would meet this standard.

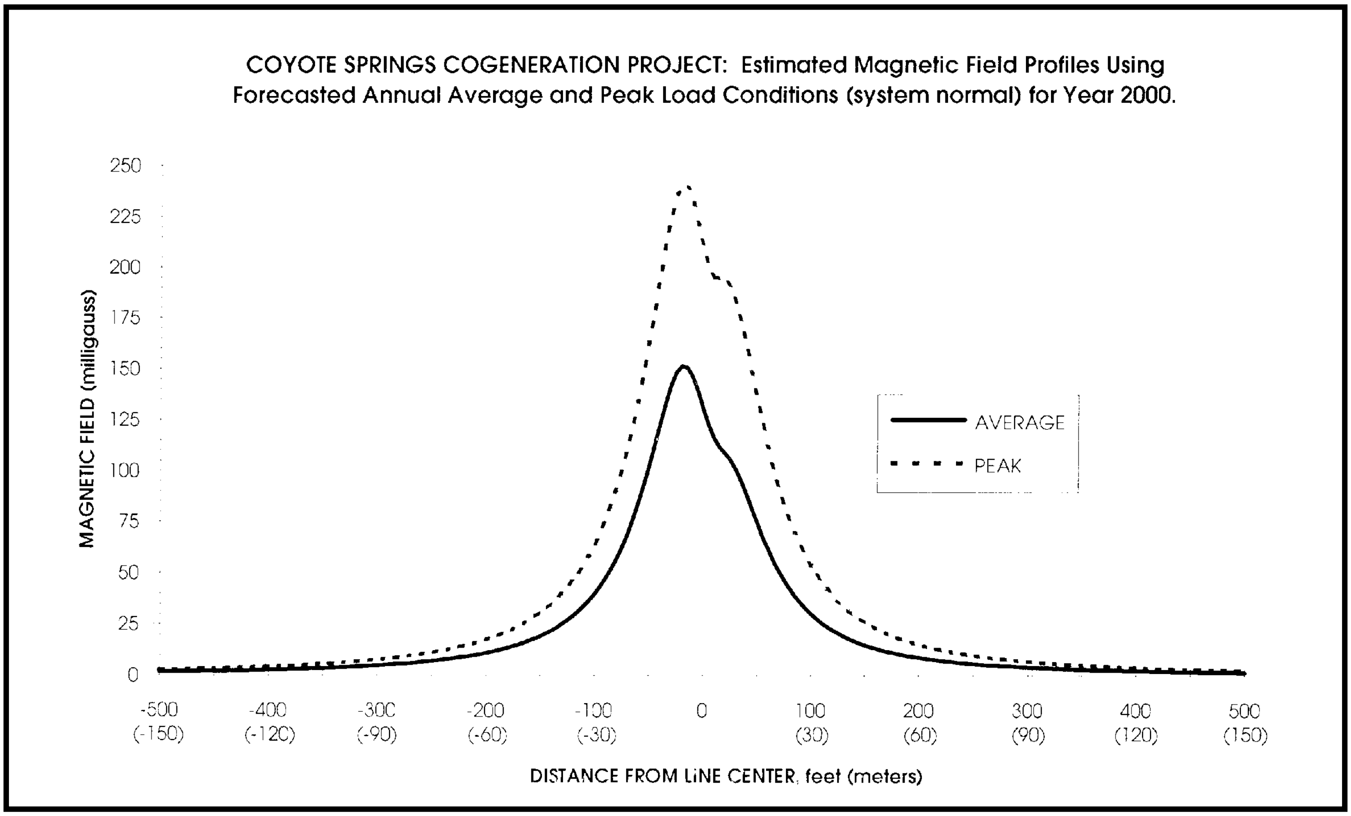
Both electric and magnetic alternating-current (AC) fields induce currents in conducting objects, including people and animals. These currents, even from the largest power lines, are too weak to be felt. However, some scientists believe these currents might be potentially harmful and that long-term exposure should be minimized. Hundreds of studies on electric and magnetic fields have been conducted in the U.S. and other countries. Studies of laboratory animals generally show that these fields have no obvious harmful effects. However, a number of subtle effects of unknown biological significance have been reported in some laboratory studies (Frey, 1993).

Much attention at present is focused on several recent reports suggesting that workers in certain electrical occupations and people living close to power lines have an increased risk of leukemia and other cancers (Sagan, 1991; National Radiological Protection Board, 1992; Oak Ridge Associated Universities Panel, 1992; and Stone, 1992). Most scientific reviews, however, find that the overall evidence is too weak to establish a cause-and-effect relationship between electric or magnetic fields and cancer. For this reason specific health risks related to exposure to EMF are unknown. A review of some of the studies relating to EMF and possible biological and health effects are included in Appendix B.

Significance of EMF Exposures - Adverse health effects, specific health risks, or specific potential levels of disease related to exposure to EMF are unknown. BPA conducts *exposure assessments* of magnetic fields from transmission lines. Exposure assessments are estimates of the field levels that people are potentially exposed to.

Exposure Assessment - In general, magnetic field exposure assessments are performed by calculating field levels in locations where there are potential long-term exposures to people. This is usually done by assessing the number of homes, schools or businesses near the proposed project where magnetic field exposures may be created by the proposed project. Estimated magnetic fields along the proposed transmission line are provided in Figure 5-1. Figure 5-1 shows that magnetic fields drop rapidly as distance from the transmission line increases.

Figure 5-1
EMF Exposure Assessment



The proposed transmission line is within the Port of Morrow Industrial Park, thus EMF exposure to people would be limited. There is only one building employing or housing people close enough to the transmission corridor to potentially experience an increase in magnetic field exposure. The onion processing plant is about 130 m (425-450 ft.) from the centerline of the new transmission line. As Figure 5-1 indicates, this building is estimated to experience 2-3 milligauss magnetic field exposure from the new transmission line. The onion processing plant may already receive some magnetic field exposure from the existing 115-kV line along the Port access road. There are two mobile homes in the area owned by the Port that would be removed. Also, two buildings associated with the concrete batch plant are scheduled for removal because the plant is moving to a new location.

Electrical current levels and EMF exposure levels along other parts of the transmission system may be affected because of this project. Increases or decreases to the magnetic field environment may occur in some areas along the transmission system.

Visual and Aesthetic Impacts - Power Integration

Section 4.1.6 discussed the project, impact area visual characteristics, land use designations (visually sensitive), and viewers potentially exposed. The following discussion identifies the compatibility or impact of the proposed transmission line and tap with these characteristics. Table 5-8 identifies the sensitive observation areas that can see the project (plant facilities and transmission), the distance, and the degree of significance of the visual impact. Figure 5-2 simulates the appearance of the new transmission line as viewed from I-84.

The significance of impact has been determined based on the sensitivity of viewing activity, the degree of visibility (distance), the significance of the viewing area (designated, protected), and the number or type of viewers. The analysis was based on the visibility of the most significant elements of the project, the transmission towers and plant substation. Because of the existing impact and visual dominance of the existing transmission corridors and Boardman Substation, the increased visual impact on viewers or sensitive observation areas beyond 6.3 km (3.9 miles) would be minimal.

The visual impacts of the transmission facilities would occur primarily to the near views. These impacts would occur to people using the Columbia River, portions of the Umatilla Wildlife Refuge, I-84, nearby residences and Port work areas, Messner Pond, Washington Highway 14, and the Coyote Springs State Wildlife Refuge. The proposed transmission line would not be visible or have only low impact significance on any of the key observation areas identified on Table 5-6. The dominant transmission visual features would be the new 500-kV transmission towers and the tap structure that would be within 0.4 km (1/4 mile) of I-84. The proposed transmission line alignment would cross over a vegetated portion of the Messner Pond natural area. Russian olive trees that would be crossed may require clearing, which would increase the visual impact of the project.

Mitigation - Topographic screening is not practical due to the height of the transmission structure and the flat terrain surrounding the site. BPA would use the following measures to minimize the visual impacts of transmission lines structures built for the plan proposed.

- Transmission structures for parallel lines would be designed and located to provide uniformity to the extent practical. That is, structures would be parallel to existing structures. Insulator colors would be matched between existing and new lines.

- The galvanized transmission towers would be specially treated to reduce reflectance and match the existing weatherized transmission towers.

- ***Non-specular*** conductors could be used to reduce visibility between the existing transmission corridor and the generation plant.

- The substation and tap installations would be designed to be aesthetically pleasing. The substation would be landscaped with native plant materials. Substation structures would be painted in a color compatible with the surrounding area.

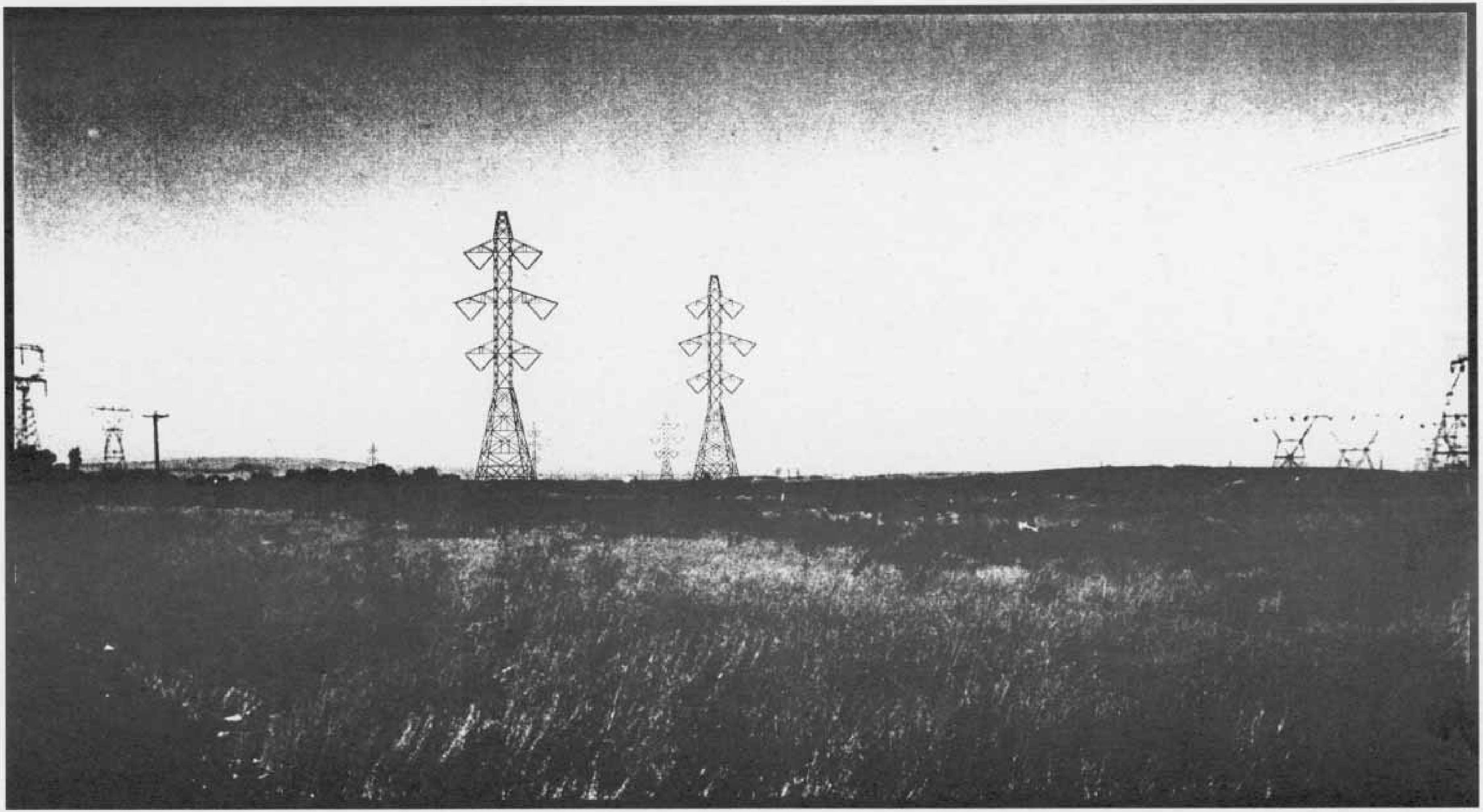


Figure 5-2
Transmission Tap and
Loop Line Simulation

Coyote Springs Cogeneration Plant - Morrow County, Oregon

Noise Impacts - Power Integration

Power transformers within the Coyote Springs substation switchyard would create noise. While old power transformers at times exceed nighttime noise standards, modern transformers are designed to meet the most stringent noise standards.

Transmission lines also create noise through a process called corona activity. An audible popping sound occurs when air breaks down due to the high fields on the surface of the transmission line conductors. During fair weather, 500-kV lines typically create noise levels below normal background (ambient) at the edge of the right-of-way. During heavy precipitation noise levels increase. The use of conductor bundles (2-4 conductors/phase) has considerably reduced transmission line noise levels. A three conductor/phase design will be used for the proposed loop line.

Considering that no noise sensitive properties are near the transmission line route, no significant noise impacts would result from power integration. The proposed transmission loop line will meet the Oregon noise standard in both fair and foul weather conditions.

Cultural Resource Impacts - Power Integration

The proposed 500-kV transmission line and substation would not be on or within any known historic, cultural, and/or archeological resources. Site-specific surveys have been performed to check for the presence of historic, cultural, and archeological resources, and provide for any needed protection, recovery, or avoidance. (See Section 4.1.7.)

Should any archeological, historical, or cultural resources be encountered during construction or operation of the proposed facilities, both ORS 358.920 and 36 CFR 800.11 apply. The former statute prohibits the disturbance or excavation of an archeological site on public lands (including lands owned by port districts) without a permit issued by the state under ORS 390.235. The latter regulation addresses procedures in the event of cultural resource finds made during the course of Federally permitted or licensed undertakings. In pursuant of these legal authorities, if any cultural resource discoveries are made during development or operation of Coyote Springs facilities, all ground-disturbing activity in the vicinity of the find would be halted immediately and the following agencies notified: the Oregon State Historic Preservation Office, FERC, and the Confederated Tribes of the Umatilla Indian Reservation.

ORS 97.745 prohibits the disturbance or removal of Indian burials or graves, whether on public or private lands. Should an Indian burial or possible burials be encountered during construction or operations of the Coyote Springs facilities, all ground-disturbing activity in the vicinity would cease immediately and the following agencies notified: the Oregon State Historic Preservation Office, the Oregon Commission on Indian Services, and the Confederated Tribes of the Umatilla Indian Reservation.

Protected Resource Impacts - Power Integration

Construction and operation of the transmission line is not expected to have a significant adverse impact to Protected Resources. The proposed 500-kV electrical transmission line is about 3.7 km (2.3 miles) from the McCormack unit of the Umatilla National Wildlife Refuge and 1 km (0.6 mile) from the Coyote Springs Wildlife Area.

5.1.3 Coyote Springs Extension Pipeline Impacts

Public distribution of an Environmental Assessment (EA) on PGT's proposed Coyote Springs and Medford Lateral pipelines is planned for released by FERC in the fall of 1994. Impacts reported here and in Table 5-10 are taken from environmental resource reports commissioned by PGT for submittal to FERC in Docket No. CP93-618-000 and CP93-618-001.

Land Use Impacts - Pipeline

Since most of the proposed route is located within or adjacent to existing, previously disturbed right-of-way, construction effects for the pipeline on land use should be minor and insignificant. Traffic along Bombing Range Road will be disrupted by interruptions for short periods due primarily to the precautions for safe movement of equipment or pipe. The crossings of Interstate I-84 and Wilson Road will be bored because of high traffic volumes and requirements by Morrow County Public Works and Oregon Department of Transportation. Traffic will not be disrupted. The West Extension Irrigation Canal would be bored to avoid interruption of water flow.

Minor short-term inconveniences may occur to some property owners because of construction activities. Access to homes and business will be provided at all times. All landowners will be compensated for unforeseen damage to property.

Mitigation - Special safety precautions and traffic control would be implemented during construction along Bombing Range Road. PGT would inspect and maintain the pipeline for the life of the project.

Natural Resource Impacts - Pipeline

Geology

Impacts on geology would be minor and insignificant, and would only occur during grading and excavation of the pipeline trench. With the nearest known fault miles away, seismic ground shaking is not expected to strain the earth surrounding the pipeline. It is possible that shaking could affect the integrity of the pipeline, however welded steel pipelines have good inherent ductility, and potential damage is not probable.

Potential effects to soil could include loss of topsoil, mixing of topsoil and subsoil, compaction, and wind or water erosion. Since the majority of the route is located in existing utility or transportation corridors which are not on lands used for agriculture, the effects would be minimal.

Mitigation - PGT will follow FERC's "Erosion Control, Revegetation, and Maintenance Measures" guidelines. Preconstruction contours will be reestablished to minimize erosion. Topsoil stockpiled during construction will be replaced last. Disturbed areas will be stabilized. The working area will be reseeded during the final cleanup phase of construction, unless property owners prefer otherwise.

Air Quality

Effects on air quality from construction of the pipeline would be temporary, and are not expected to exceed any air quality standards. Dust created as a result of vegetation clearing and disturbances by construction equipment would be minor. No impacts are expected after construction.

Mitigation - Watering of the working area during construction would control dust levels, and revegetating the exposed soil after project completion would provide final stabilization.

Vegetation

Throughout the 30 km (18.5 mile) pipeline route, agriculture and road/utility line maintenance operations have virtually eliminated all tracts of native vegetation. Existing vegetation communities along the route will be disturbed by the construction activities. Disturbance will be limited to the construction period, and will be restricted to within 10 m (35 ft.) or less of the pipeline centerline. Vegetation disturbed will largely consist of disturbed weedy grassland and grazed grassland communities. These impacts are not considered significant as these vegetation communities are common in the area, and are already highly disturbed. No protected sensitive plant species were identified during field surveys along the route.

Mitigation - In spring 1994, plant surveys were repeated because part of the pipeline route has been shifted to the west side of Bombing Range Road. A revegetation plan will be developed as part of the FERC required Erosion Control, Revegetation, and Maintenance Plan. The plan will include at a minimum: plant species to be used for restoration, site preparation, timing of planting or seeding, fertilization, monitoring program, and a contingency program in case of failure. Local soil conservation authorities will be consulted in the preparation of the plan and for the identification and procedures for minimizing effects of noxious weeds.

Fish and Wildlife

No fish or threatened and endangered species are expected to be affected by the construction or operation of the pipeline.

Impact Table - Coyote Springs Pipeline Extension

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
SURFACE WATER				
Erosion of streambanks	Unlikely	Unlikely	NPDES Requirements. Follow guidelines provided by FERC's Wetland and Waterbody Construct and Mitigation Procedures	DEQ 1200 C
Increased sediment transport	Unlikely	Unlikely	(See above)	DEQ 1200 C
Resuspension of toxic contaminants	Unlikely	Unlikely	(See above)	DEQ 1200 C
Spills of fuel or other hazardous fluids	Unlikely	Unlikely	(See above)	DEQ 1200 C
WETLANDS				
Degradation of water quality	None	None	NPDES Requirements (i.e., reseedi disturbed areas, sediment filte watering to control dust, locat staging areas away from wate features, refueling 200 feet fr wetland boundaries). Also see abo	DEQ 1200 C
Chemical releases to groundwater	Unlikely	Small, localized and insignificant	(See above)	DEQ 1200 C
Fisheries and aquatic	None	None	(See above)	None
VEGETATION				
Herbaceous habitat disturbance	Likely	Short-term	Native plant restoration after construction	None
Woody shrub habitat disturbance	Likely	Long-term small acreag	Native plant restoration after construction	None
Wetland vegetation disturbance	None	None	Native plant restoration after construction	None
WILDLIFE				
Fauna				
Mortality of individuals	Likely	Less mobile, dormant species	Surveys of critical habitat, sche construction activities to avoid i	None
Temporary displacement	Likely	Mobile species	(See above)	None
Stress in crucial life cycle times	Likely	Less mobile species	(See above)	None
Wildlife Habitat				
Shrub-steppe	Likely	Conversion to grassland	Reseeding, native plant restorat after construction.	None
Grazing/agriculture	Likely	Disturbance with recover within 2 seasons	(See above)	None
Impact to grassland habitats	Likely	Temporary alteration	(See above)	None
Impact to sandy bitterbrush step habitats	Likely	Cheatgrass replacement	(See above)	None
Indirect impacts to wildlife due increased access	Likely	Slight	None	None
FISH				
None	None	None	Follow guidelines provided by FER Wetland and Waterbody Construct and Mitigation Procedures.	None

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
SPECIAL STATUS SPECIES				
Washington ground squirrel	Likely *	Mortality i occupied burrows are excavated. Loss of habit	Surveys of critical habitats, sche construction activities to avoid i	None
Burrowing owl	Likely *	Mortality i occupied burrows are excavated. Loss of habit	(See above)	None
Pygmy rabbit	Unlikely	Mortality o young or dormant rabbits	(See above)	None
Long-billed curlew	Likely *	Loss of eggs, nest abandonment	(See above)	None
Columbia cress	Unlikely	Slight	None	None
Lawrence's milkvetch	Unlikely	Moderate	None	None
Robinson's onion	Unlikely	Slight	None	None
Thompson's sandwort	Unlikely	Slight	None	None
THREATENED AND ENDANGERED SPECIES				
Plants				
None found	Unlikely	None-slight	Field Survey-Consultation with USFWS	None
Wildlife				
None found	Unlikely	None-slight	Field Survey-Consultation with USFWS	None
Fish				
None	None	None	Field Survey-Consultation with USFWS	None
CULTURAL RESOURCES				
Disturbance of prehistoric and his archeological sites during constru	Unlikely	Unlikely	Cultural resource survey prior construction, consultation with S Tribes, avoidance of identified s excavation and recording of the s avoidance impossible.	None
Destruction of standing buildings structures within the impact area pipeline route.	Unlikely	Unlikely	(See above)	None
Vandalism of sites due to increas access.	Unlikely	Unlikely	(See above)	None

* Unlikely if constructed in non-breeding season

**Table 5-10 - Impact Table
Coyote Springs Pipeline Extension**

Impact Table - Coyote Springs Pipeline Extension

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
SOCIOECONOMIC				
4 person-years of labor (32 short skilled craft jobs) would be hired fr local area.	Likely	Short-term employment increase	Socioeconomic effects from th pipeline project are not expected t significant. No mitigation is plar	None
12 person years of construction la (100 non-local workers) would temporarily in-migrate to work on pipeline.	Likely	Temporary population increase of 17 persons (families of workers).	(See above)	None
Loss of agricultural income within right-of-way during constructio	Likely	Small acreage impacted fo one season.	(See above)	None
Construction workers would place demand on locally available housin	Likely	52 units of temporary housing needed.	(See above)	None
Minor demands for local services (primarily the road system).	Likely	Minor impact on schools.	(See above)	None
Real property tax revenues would paid after the pipeline is comple	Likely	$181,000 annually	(See above)	None
Pipeline completion makes sever projects (including Coyote Spring Cogeneration Plant) viable.	Likely	Major-positive economic benefits	None	None
GEOLOGY/HAZARDS				
Clearing, grading, trenching, stock of excavated materials would imp topography	Likely	Minimal	Disturbed areas will be graded ar restored to approximate preconstruction conditions. Eros controls will be used at disturbed The pipe design will take into acc seismic conditions for the project	
The proposed pipeline could limit a to exploitable aggregate resourc within the pit mine it crosses	Unlikely	Minor - aggregate supplies in th area are abundant	Compensate owner for loss of income.	None
Geologic hazards could affect th integrity of the pipeline (seismic s or erosion at stream crossings)	Unlikely	Stress to the pipeline and creation of potential wea points.	See Text (No Streams are crossed)	None
SOIL				
Construction resulting in: loss vegetative cover, and topsoil; mixi topsoil with less fertile subso deposition and sedimentation of lo lying lands from increased soil ero soil compaction. Permanent loss soils/productivity.	Likely	Conversion to grassland	Follow guidelines provided by FER Erosion Control, Revegetation, ar Maintenance Plan.	None
LAND USE				
Road crossings could disrupt tra during construction.	Likely	Short-term, minor		
	Unlikely	Short-term	Utilities would be located prior construction.	None
Pipeline storage yards would disr current land uses until the pipelin complete and lands are restored to prior condition.	Unlikely	Short-term	The site selected for pipeline stor currently unused and vacant	

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
LAND USES Cont.				
Clearing and construction of the pi would disrupt current land uses	Likely	Short-term, temporary	78% of the proposed route is adja to existing, previously disturbed of-way. Landowners would be compensated for losses. Land wo be restored to prior conditions Activities such as grazing and agriculture would resume in rig way.	
Pipeline construction, if overlapping building the power plant, could inconvenience local area resident	Likely	Short-term temporary	Construction will occur over a per about 2 months. Because the perio disruption will be short, no mitiga planned.	None
RECREATION				
The pipeline crosses the Oregon T Construction would have a short-t (about 1 day) impact on trail use	Likely	Short-term minor	Access to trail users would be pr during construction	None
People using Messner Pond for fish or birdwatching could be disrupte during construcion of the pipelin Public access would not be impact	Unlikely	Short-term, minor	None	None
PROTECTED RESOURCES				
Oregon DOE-designated Protected Resources	Unlikely	Slight	None	None
VISUAL AND AESTHETIC RESOURCES				
The pipeline passes through areas slightly altered landscapes for most length. In these areas impacts wou moderate. In the industrial park landscape is highly altered and th pipeline would have low impact.	Likely	Moderate to low	Minimizing clearing to reduce con Stockpile and replace native soils disturbed areas. Restore contours revegetate disturbed areas with r plants.	None
AIR QUALITY AND NOISE				
Air emissions (carbon monoxide nitrogen oxides, volatile organi compounds, particulate matter and dioxide) from construction of the p would be negligible.	Minimal	Localized and slight	None	None
Fugitive dust emissions would occur result of soil exposure	Minimal	Localized	Limit right-of-way clearing. See mulch to protect soil. Water exp soil during periods of high wind. low velocity equipment.	None
Construction of the pipeline wou increase noise levels.	Likely	Localized	Work will be limited to daytime h Mufflers and quieting devices woul used when needed. Work schedulin to avoid periods of noise annoyan Install temporary or portable no barriers around stationary nois sources, if needed.	None

Table 5-10 - Impact Table (continued)
Coyote Springs Pipeline Extension

Impact Table - Coyote Springs Pipeline Extension

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
SOCIOECONOMIC				
4 person-years of labor (32 short skilled craft jobs) would be hired fr local area.	Likely	Short-term employment increase	Socioeconomic effects from th pipeline project are not expected t significant. No mitigation is plar	None
12 person years of construction la (100 non-local workers) would temporarily in-migrate to work on pipeline.	Likely	Temporary population increase of 17 persons (families o workers).	(See above)	None
Loss of agricultural income within right-of-way during constructio	Likely	Small acreage impacted fo one season.	(See above)	None
Construction workers would place demand on locally available housin	Likely	52 units of temporary housing needed.	(See above)	None
Minor demands for local services (primarily the road system).	Likely	Minor impact on schools.	(See above)	None
Real property tax revenues would paid after the pipeline is comple	Likely	$181,000 annually	(See above)	None
Pipeline completion makes sever projects (including Coyote Spring Cogeneration Plant) viable.	Likely	Major-positive economic benefits	None	None
GEOLOGY/HAZARDS				
Clearing, grading, trenching, stock of excavated materials would imp topography	Likely	Minimal	Disturbed areas will be graded ar restored to approximate preconstruction conditions. Eros controls will be used at disturbed The pipe design will take into acc seismic conditions for the project	
The proposed pipeline could limit a to exploitable aggregate resourc within the pit mine it crosses	Unlikely	Minor - aggregate supplies in th area are abundant	Compensate owner for loss of income.	None
Geologic hazards could affect th integrity of the pipeline (seismic s or erosion at stream crossings)	Unlikely	Stress to the pipeline and creation of potential wea points.	See Text (No Streams are crossed)	None
SOIL				
Construction resulting in: loss vegetative cover, and topsoil; mixin topsoil with less fertile subso deposition and sedimentation of lo lying lands from increased soil ero soil compaction. Permanent loss soils/productivity.	Likely	Conversion to grassland	Follow guidelines provided by FER Erosion Control, Revegetation, ar Maintenance Plan.	None
LAND USE				
Road crossings could disrupt tra during construction.	Likely	Short-term, minor		
	Unlikely	Short-term	Utilities would be located prior construction.	None
Pipeline storage yards would disr current land uses until the pipelin complete and lands are restored to prior condition.	Unlikely	Short-term	The site selected for pipeline stor currently unused and vacant	

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
LAND USES Cont.				
Clearing and construction of the pi would disrupt current land uses.	Likely	Short-term, temporary	78% of the proposed route is adja to existing, previously disturbed of-way. Landowners would be compensated for losses. Land wo be restored to prior conditions Activities such as grazing and agriculture would resume in rig way.	
Pipeline construction, if overlapping building the power plant, could inconvenience local area resident	Likely	Short-term temporary	Construction will occur over a per about 2 months. Because the perio disruption will be short, no mitiga planned.	None
RECREATION				
The pipeline crosses the Oregon T Construction would have a short-t (about 1 day) impact on trail use	Likely	Short-term minor	Access to trail users would be pro during construction	None
People using Messner Pond for fish or birdwatching could be disrupte during construcion of the pipelin Public access would not be impact	Unlikely	Short-term, minor	None	None
PROTECTED RESOURCES				
Oregon DOE-designated Protected Resources	Unlikely	Slight	None	None
VISUAL AND AESTHETIC RESOURCES				
The pipeline passes through areas slightly altered landscapes for most length. In these areas impacts wou moderate. In the industrial park landscape is highly altered and th pipeline would have low impact.	Likely	Moderate to low	Minimizing clearing to reduce con Stockpile and replace native soils disturbed areas. Restore contours revegetate disturbed areas with n plants.	None
AIR QUALITY AND NOISE				
Air emissions (carbon monoxide nitrogen oxides, volatile organi compounds, particulate matter and dioxide) from construction of the p would be negligible.	Minimal	Localized and slight	None	None
Fugitive dust emissions would occur result of soil exposure	Minimal	Localized	Limit right-of-way clearing. See mulch to protect soil. Water exp soil during periods of high wind. low velocity equipment.	None
Construction of the pipeline wou increase noise levels.	Likely	Localized	Work will be limited to daytime h Mufflers and quieting devices woul used when needed. Work schedulin to avoid periods of noise annoyan Install temporary or portable no barriers around stationary nois sources, if needed.	None

Table 5-10 - Impact Table (continued)
Coyote Springs Pipeline Extension

Impact Table - Coyote Springs Pipeline Extension

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
LAND USES Cont.				
Clearing and construction of the pi would disrupt current land uses.	Likely	Short-term, temporary	78% of the proposed route is adja to existing, previously disturbed of-way. Landowners would be compensated for losses. Land wo be restored to prior conditions Activities such as grazing and agriculture would resume in rig way.	
Pipeline construction, if overlapping building the power plant, could inconvenience local area resident	Likely	Short-term temporary	Construction will occur over a per about 2 months. Because the perio disruption will be short, no mitiga planned.	None
RECREATION				
The pipeline crosses the Oregon T Construction would have a short-t (about 1 day) impact on trail use	Likely	Short-term minor	The trail would be restored to original condition after pipelin construction.	None
People using Messner Pond for fish or birdwatching could be disrupte during construcion of the pipelin Public access would not be impact	Unlikely	Short-term, minor	None	None
PROTECTED RESOURCES				
Oregon DOE-designated Protected Resources	Unlikely	Slight	None	None
VISUAL AND AESTHETIC RESOURCES				
The pipeline passes through areas slightly altered landscapes for most length. In these areas impacts wou moderate. In the industrial park landscape is highly altered and th pipeline would have low impact.	Likely	Moderate to low	Minimizing clearing to reduce con Stockpile and replace native soils disturbed areas. Restore contours revegetate disturbed areas with r plants.	None
AIR QUALITY AND NOISE				
Air emissions (carbon monoxide, nitrogen oxides, volatile organic compounds, particulate matter and dioxide) from construction of the p would be negligible.	Minimal	Localized and slight	None	None
Fugitive dust emissions would occur result of soil exposure	Minimal	Localized	Limiting right-of-way clearing. S or mulching to protect soil. Wat exposed soil during periods of hi wind. Using low velocity equipm	None

POSSIBLE IMPACTS	IMPACT LIKELIHOOD	IMPACT EXTENT	MITIGATION IDENTIFIED	PERMIT REQUIRED
AIR QUALITY AND NOISE (Cont.)				
Construction of the pipeline wou increase noise levels.	Likely	Localized	Work will be limited to daytime h Mufflers and quieting devices woul used when needed. Work schedulin to avoid periods of noise annoyan Install temporary or portable no barriers around stationary nois sources, if needed.	None

Table 5-10 (continued)
Impact Table - Coyote Springs Pipeline Extension

The major impact to wildlife will be the temporary disturbance to wildlife habitat, largely consisting of disturbed grassland and grazed grassland. A small amount of shrub-steppe habitat may be impacted. These habitat impacts are not considered significant as they are common in the area, and are already disturbed. There may also be some direct mortality of wildlife in underground burrows or of young birds in ground nests during pipeline construction. This is not considered a significant impact to local populations of common species. Common species are widespread and abundant: mortality from construction would be minor relative to both local populations and normal annual mortality, and losses are expected to be replaced during the following breeding season.

Three sensitive avian species may be impacted by construction of the proposed pipeline: long-billed curlew, grasshopper sparrow, and burrowing owl. All are ground nesting birds whose nests and young could be destroyed if construction occurred during the breeding season in portions of the route where they might nest. The Washington ground squirrel could also be affected if it is using rodent burrows along the route. Other sensitive species were not observed in the project area, were observed outside the area to be impacted, or appropriate habitat was not found in the pipeline route and thus are not expected to be impacted by the project.

Mitigation - In 1994, surveys to determine breeding locations were repeated for long-billed curlews, grasshopper sparrows, burrowing owls, and Washington ground squirrels because part of the pipeline route had been shifted to the west side of Bombing Range Road.

Construction is not anticipated to occur during long-billed curlew, grasshopper sparrow, burrowing owl and Washington ground squirrel breeding season (May to August), in areas where these species have been found breeding. This will prevent destruction of eggs or young in nests.

All mitigations described in the vegetation section will be followed. Revegetation of disturbed areas with native plants will enhance wildlife habitats in the area. Revegetation should take place as soon as possible following disturbance to minimize the impact to wildlife populations and to reestablish wildlife habitats promptly.

Socioeconomic Impacts - Pipeline

Significant socioeconomic benefits are anticipated from the pipeline construction in the form of increased construction-related employment, income, and sales, and increased property tax revenues for Morrow County.

The only negative impact is the possible shortage of temporary housing for in-migrant construction workers due to competition for housing units with the construction workers for the cogeneration plant. Since the period of pipeline construction is only 5 to 6 weeks, this impact is considered minor. The housing shortage could be reduced by doubling up workers in motel rooms and apartments, and the use of recreation vehicles and mobile homes which are typically brought in by transient pipeline construction workers.

Public Health and Safety Impacts - Pipeline

Impacts on public health and safety are not expected. The PGT pipeline would be designed, constructed, operated and maintained in accordance with Department of Transportation Minimum Federal Safety Standards (CFR 49 Part 192).

Noise Impacts - Pipeline

No long-term noise impacts would result from construction of the pipeline. Increased noise levels resulting from construction activities would be localized. Nighttime noise levels normally would be unaffected because work would be limited to daylight hours. Construction activity occurring during the daytime (7:00 a.m. to 10:00 p.m.) is exempt from Oregon noise level requirements. Standard operation and maintenance of the pipeline would not significantly increase noise levels. Noise from blowdown would be temporary and would occur only during emergency situations or planned maintenance activities.

Recreation/Protected Resources/Visual and Aesthetic Impacts - Pipeline

No impacts will occur to recreation or protected resources. Access to the Oregon Trail entrance where it crosses the Boardman Bombing Range will be provided for hikers during construction.

Impacts will be negligible for visual and aesthetic resources during construction of the pipeline. Visual impacts along the generally flat, open route, are considered short-term because vegetation would recover during the year or two after construction. The revegetation plan mentioned previously will augment restoration of the right-of-way and working area.

Because it would be buried, the pipeline will not be visible for the entire length of the route. Only identification markers spaced at varying intervals would be evident. Above ground facilities which include the meter station and mainline valve would be located at the proposed cogeneration plant, and would have no adverse effect of the site. The mainline valve at the mainline system connection would have no visual effect on the area.

Cultural Resources Impacts - Pipeline

Intensive cultural resource field surveys were performed along the route, and no prehistoric or significant historic resources were found. Twelve historic resources were identified, only one of which was recommended as significant (the West Extension Irrigation Canal). Additionally,

investigation of the Oregon Trail crossing indicated that the trail segment is unrecognizable as a result of irrigation systems' construction and agricultural plowing. The segment, therefore, is not recommended as eligible for listing on the National Register. The SHPO, the Bureau of Reclamation, the Navy and the Umatilla were provided the survey results. To date, only the Umatilla have commented.

5.1.4 Cumulative Impacts

The Council on Environmental Quality (CEQ) defines ***cumulative impact*** as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

Within this context, several cumulative impacts are foreseeable.

Global Warming - Cumulative Impacts

The Coyote Springs Plant would release greenhouse gases. Greenhouse gasses reflect infrared radiation back to earth thus preventing heat loss to outer space. Because of this reflective capability greenhouse gases may contribute to global warming.

The proposed Coyote Springs Plant, together with PGE's existing Boardman Coal Plant and proposed cogeneration plants near Hermiston, Oregon would cumulatively emit approximately 15 percent of Oregon's 1990, or 0.04 percent of global human-caused 1990 CO_2 emissions. In spite of these facilities comparatively large CO_2 emissions, it is important to realize that the CO_2 emissions per thousand kWh from new efficient natural gas combustion turbines such as Coyote Springs and the proposed plants near Hermiston, are 40 to 50 percent of those from coal-fired plants. Cogeneration units emit even less if offset emissions from steam boilers are considered.

One mitigating action that has been taken to offset CO_2 emissions is planting trees. Trees use airborne CO_2 to grow. A new policy of the Clinton administration is to grant tax credits to utilities that take actions to offset CO_2 emissions from their generating plants. PGE has not decided to undertake CO_2 offset mitigation at this time.

Transmission Capacity - Cumulative Impacts

Integrating the Coyote Springs Cogeneration Plant over the BPA transmission system would diminish surplus capacity on BPA's McNary-Slatt 500-kV transmission line. Presently, the surplus capacity of this line has been rated at 700-800 MW, which is more than the total output of both Coyote Springs generation units. The proposed Hermiston Generation Plant and the Hermiston Power Plant also intend to use BPA's transmission system. Their combined capacity would be 800-900 MW. If all three proposed plants are built, demands would exceed BPA's existing

transmission system capabilities. Using projected completion dates for these units and assuming all three were integrated, BPA would need to install additional transmission capacity by the year 2000.

BPA has considered how this might be done. The most favorable solution would be to build a new 500-kV transmission line from McNary Substation adjacent to the 345-kV McNary-Ross transmission line to an interconnection with BPA's existing 500-kV Ashe-Marion lines northeast of Crow Butte, Washington. BPA's Ashe-Marion transmission lines were built in the late 1970s to integrate energy from several nuclear power plants proposed at the Hanford Reservation and near Boardman (Pebble Springs Nuclear Plant). Only one nuclear power plant was completed on the Hanford Reservation, which left surplus capacity on the Ashe-Marion 500-kV transmission lines. Tapping these lines in Washington north of Crow Butte would provide a path for power from the proposed cogeneration plants west to the Willamette Valley in Oregon. This option and other ways to expand transmission capacities would be evaluated for environmental impacts before a decision is made.

Groundwater - Cumulative Impacts

To assess the significance of potential present and future incremental impacts due to groundwater pumping, an inventory of groundwater rights has been prepared for both alluvial wells and basalt wells located within 1.6 km (1 mile) of the Coyote Springs Plant, including all Port of Morrow wells (see Table 5-11). The information was obtained from OWRD files and the Port of Morrow. The Port of Morrow controls 93 percent of the total permitted groundwater withdrawals within a mile of the Coyote Springs Plant. This does not include the City of Boardman's appropriation. The City of Boardman has a surface water right for 61 m^3 per minute (16,100 gpm [36 cfs]), of which 25 m^3 per minute (6,600 gpm [14.7 cfs]) is reported to be developed. Although the City of Boardman has a surface water right, some of this appropriation is supplied by groundwater from the alluvial aquifer because the City uses a Ranney Collector next to the Columbia River.

As shown in Table 5-11, 70 percent of the Port's permitted appropriation is from the alluvial aquifer and 30 percent is from the basalt aquifer. The total Coyote Springs Plant demand will make up 22 percent of the total Port-owned alluvial aquifer appropriation. As stated previously, the Coyote Springs Plant demand will not result in an increase in the alluvial aquifer pumping in the area since the wells supplying the project have been used historically by the Port for its other operations. In fact, there will be a net 0.17 m^3/s (4.5 cfs) reduction in pumping during the summer as a result of transferring the water right at the Carlson Sumps from a 6-month agricultural right to a 12-month municipal right. Furthermore, the cooling and blowdown wastewater generated by the Coyote Springs Plant will be reused to irrigate crops at the Port of Morrow land application sites. The Port presently beneficially reuses a total of nearly 3 800 000 m^3 (1 billion gal.) of water per year, which results in significant conservation of water that would otherwise be obtained from the Columbia River or groundwater.

While not directly associated with the Coyote Springs Plant, the Port of Morrow's new basalt well (Port Well # 5) will make up 41 percent 7.6 m^3/s (2,693 gpm) of the total permitted basalt aquifer withdrawals within a mile of the Coyote Springs Plant (Table 5-11). The OWRD has responsibility and authority to review and approve all requests for groundwater appropriations. The review process includes an assessment of whether or not the aquifer can support the additional pumping without injuring senior water rights holders. The OWRD has determined that Port Well #5 will not create unacceptable present or future impacts and has issued a favorable technical review of the Port's application. Further, OWRD has stated that there are sufficient water rights within the Port of Morrow to support the project.

If unacceptable impacts due to pumping are observed in the future, the OWRD has the authority to limit further appropriations and reduce the total pumping demand based on seniority of water rights. This authority has been exercised at the Ordinance Critical Groundwater Area (OCGA). The OWRD is not considering expanding the OCGA.

There is no information that indicates that the proposed groundwater withdrawals for the project would result in unacceptable present or future cumulative impacts. This conclusion is supported by the following:

- The Coyote Springs Plant will derive its water supply from existing permitted shallow aquifer water sources at the Port of Morrow.

- The OWRD has stated that there are sufficient water rights available at the Port to supply the project.

- There will be a net 0.17 m^3/s (6 cfs) reduction in pumping from the alluvial aquifer during the summer months when low flow in the Columbia River is a concern for fish protection reasons.

- OWRD has issued a favorable technical review of the Well #5 permit application.

- The number of groundwater users near the Coyote Springs Plant are limited; the Port controls 93 percent of the groundwater rights within 1.6 km (1 mile) of the project.

- OWRD has the responsibility to monitor future impacts caused by overpumping and will limit further appropriations if it is found that senior water rights holders are being adversely impacted.

Threatened or Endangered Salmon - Cumulative Impacts

In testimony relating to PGE's Application for a Site Certificate before the Oregon EFSC John Pizzimenti, a scientist specializing in studies on fish in regulated rivers, provided the following explanation of how the Coyote Springs Cogeneration Project might impact threatened or endangered salmon; "In theory, the Coyote Springs project could impact fish in the Columbia River in the following four ways:

1. ***Entrainment*** of fish through water withdrawal intakes.
   This does not occur because the water supply is from wells and is not taken directly from the river.

2. Degradation of water quality through land use modification or point source discharge.
   These do not apply because construction and operation permits will require appropriate control measures. There are no planned discharges from the project to the river.

3. Habitat destruction.
   This does not occur because the project is totally away from the river and does not require construction in the river.

4. Reduction in flows of the Columbia River.
   A maximum of 0.17 m^3/s (6 cfs)) will be appropriated to the project through existing water supply wells. These wells rely on aquifer that have connection with the river and thus affect the water budget of the river up to a maximum of 0.17 m^3/s (6 cfs)." (Pizzimenti, 1994)

Thus, the avenue by which cumulative impacts might affect threatened or endangered salmon species is by means of water withdrawals from shallow aquifers bordering the Columbia River. In 1992, Jeff Barry of CH_2M Hill conducted an extensive study of groundwater in the Boardman area in connection with an EPA funded study titled "Wellhead Protection Demonstration Project, Boardman, Oregon." Jeff Barry was hired to help assess the cumulative impact of groundwater withdrawals which has been used to predict cumulative impacts to threatened or endangered Snake River salmon species.

In Appendix C Beak Consultants concluded that the Coyote Springs Project "is not expected to result in direct mortality or disturbance (visual or auditory) to listed species." This conclusion is supported by the testimony of John Pizzimenti before the Oregon EFSC where he concludes "... diminished flows due to the Coyote Springs project are negligible. They will have no effect on the survival or recovery of threatened or endangered fish species."

Table 5-11 was developed by CH_2M Hill and provides an inventory of existing groundwater rights within a 1.6 km (1 mile) zone surrounding the Coyote Springs Plant. The total alluvium

Table 5-11
Inventory of Groundwater Rights
Near the Coyote Springs Cogeneration Project

Well Location (by section)	Owner	Local Name	Distance from Site (ft)	(cfs)	(gpm)	Aquifer	Use	Water Right Status	Permit, or Certificate Number	Well Depth (ft)
T4N R25E 1 ab	Port of Morrow	Farm Well #4	13,000	9.60	4,310	Alluvium	Irrigation	Application	Not available	
T4N R25E 1 bb	Port of Morrow	Farm Well #5	12,000	(This well is part of the above water right application)						
T4N R25E 10 aac	Port of Morrow	Well #4	3,500	1.69	758	Deep basalt	Industrial	Permit	10975	900
T4N R25E 10 abc	Port of Morrow	Toadvin Pond	2,300	6.53	2,929	Alluvium	Irrigation	Permit	10550	
T4N R25E 10 acc	Port of Morrow	Well #1	2,000	3.00	1,346	Deep basalt	Industrial	Permit	7158	685
T4N R25E 10 ada	Port of Morrow	Carlson Sumps 1&2	4,200	2.26	1,013	Alluvium	Municipal	Certificate	51782	
T4N R25E 10 ba	Port of Morrow	Well #3	1,000	2.00	898	Alluvium	Municipal	Certificate	47191	685
T4N R25E 10 bbd	Port of Morrow	Well #2	1,300	1.11	498	Deep basalt	Municipal	Certificate	58866	685
T4N R25E 12 bbc	Port of Morrow	Farm Well #1	4,000	1.60	718	Alluvium	Irrigation	Certificate	57216	71
T4N R25E 11bd	Port of Morrow	Well #5	4,000	6.00	2,693	Deep basalt	Municipal	Application	13408	900
T4N R25E 2 caa	Port of Morrow	Farm Well #3	7,000	1.58	709	Alluvium	Irrigation	Certificate	51822	93
T4N R25E 12 bba	Port of Morrow	Farm Well #2	10,000	2.88	1,293	Alluvium	Irrigation	Certificate	51822	88
T4N R25E 9 acd	Riverview Cemetary		2,000	0.06	27	Deep basalt	Irrigation	Certificate	34385	470
T4N R25E 9 cba	City of Boardman		5,000	1.50	673	Deep basalt	Municipal	Certificate	34275	585
T4N R25E 10 ccb	Homer G. Prichard		2,000	0.60	269	Shallow basalt	Irrigation	Certificate	56159	72
T4N R25E 10 ccb	Homer G. Prichard		2,000	0.28	126	Deep basalt	Irrigation	Certificate	56160	502
T4N R25E 10 dcb	Tallman and Sons		3,000	0.48	215	Shallow basalt	Irrigation	Permit	11026	210
			Total withdrawal:	41.17	18,476					
			Total alluvium withdrawal:	26.45	11,869					
			Total basalt withdrawal:	14.72	6,606					
			Total Port of Morrow withdrawal:	38.25	17,165					
			Proposed cogeneration demand:	5.95	2,668					

cfs = cubic feet per second
gpm = gallons per minute

withdrawal from the 1.6 km (1 mile) zone is 0.17 m^3/s (26.4 cfs). The demand of Coyote Springs 0.17 m^3/s (6 cfs) is included within this total. These withdrawals would not significantly impact flows in the John Day pool of the Columbia River.

When assessing cumulative impacts, reasonably foreseeable future actions are to be evaluated in combination with the proposal. The following future actions are reasonably foreseeable: (1) the Hermiston Generation Project (see page 2-3) would reduce flows in the McNary pool of the Columbia River by about 0.17 m^3/s (6 cfs); (2) the Hermiston Power Project would also reduce flows in the McNary pool of the Columbia River by about 0.17 m^3/s (6 cfs); (3) additional industrial development is likely to occur within the Port of Morrow, however the water demands of such uses is unknown.

BPA, the Bureau of Reclamation and the Army Corps of Engineers are reviewing the operation of 14 Columbia River system hydro projects. A Draft System Operation Review EIS is scheduled for release in late July 1994. Options being considered would drop the level of the John Day pool to minimum irrigation pool level of 80 m (262.5 ft.) or alternatively the minimum operation pool level of 78 m (257 ft.) minimum needed to operate the navigation locks. The John Day Pool would drop 1.5 - 3 m (5-10 ft.) if these options are selected. The outcome of the System Operation Review is considered speculative and thus is not included in the cumulative impact analysis for the Coyote Springs Plant.

Cumulative alluvial aquifer water withdrawals attributed to the Coyote Springs Plant when added to existing and foreseeable future water uses is not expected to jeopardize the continued existence of endangered or threatened Snake River salmon species. If the Coyote Springs Plant, existing withdrawals from the alluvial aquifer, and foreseeable future withdrawals are added together, the cumulative reduction of Columbia River flows due to groundwater withdrawals would be about 1.1 m^3/s (38 cfs). Compared with the spring runoff during juvenile migration in the John Day pool of the Columbia River of 7400 m^3/s- 9800 m^3/s (260,000-343,000 cfs) in 1983, the Coyote Springs Plant withdrawal of 0.17 m^3/s (6 cfs) even when viewed in an incremental and cumulative manner is insignificant. The significance of an incremental 0.17 m^3/s (6 cfs) decrease in flow cumulating to a 1 m^3/s (38 cfs) flow reduction, might be debated. However, in John Pizzimenti's testimony he states; "there is no evidence that mainstream flow is the primary determinant of salmon survival in most years in the Snake and Columbia rivers, and especially in the John Day pool." Thus flows may not be a significant factor in salmon survival.

Regional Energy Resource Needs - Cumulative Impacts

The Coyote Springs Plant, together with the combustion turbine generation projects proposed near Hermiston, if completed, would provide over 1300 aMW of energy. BPA's *1992 Pacific Northwest Loads and Resources Study* projects a 3,425 MW deficit in 2003 based on the medium load forecast. These plants in combination would satisfy a significant portion of the Northwest's forecast energy needs.

The three combustion projects would reduce flows in the Columbia River which reduces the volume of water available to downstream turbine generators. It is estimated that Coyote Springs Plant's water withdrawal of 171 liters (6 cfs) would have produced 1,000,000 kilowatt hours of electricity annually if allowed to remain in the Columbia River. Assuming the other proposed turbine generators are built and have an equivalent effect, 3,000,000 kilowatt hours of generating capability would be foregone. The average value of this energy is assumed to be 60 mills (replacement cost), annual lost revenues would be $180,000.

Compared with the combined output of the three plants (1300 aMW), a 3 aMW loss in energy is not significant. The revenue loss of $180,000 would be offset by BPA wheeling charges to project sponsors. BPA would receive between $6-8 million in annual revenues from PGE if both units are built and wheeled over the BPA transmission system. Similar wheeling charges would accrue from the Hermiston Generation Project. The Hermiston Power Project would provide for BPA loads and thus would not yield wheeling revenues. Annual wheeling revenues would range from $12-16 million and more than offset the lost energy revenues.

Tax Revenues - Cumulative Impacts

Construction of the Coyote Springs Cogeneration Project in Morrow County and the two cogeneration projects proposed for the Hermiston area could offset the tax reduction measures mandated by Oregon's Measure 5 for local governments in the area. The state of Oregon could also benefit, in that the state, under Measure 5, has the responsibility of providing the necessary funding for the local school districts beyond the maximum of $5/$1000 of valuation that can be collected for tax year 1995/96 and beyond.

Housing - Cumulative Impacts

A shortage of temporary housing facilities in the area could result if all three cogeneration projects' peak construction periods occur concurrently. Construction of large-scale cogeneration plants, such as the proposed projects, normally take place over an 18-24 month period. At peak construction of the Coyote Springs Project, an estimated 200 workers would be on-site (Mayson, 1993). At peak construction for the Hermiston Power Project, 250 workers are expected to be employed (Smith, 1993); U.S. Generating Company’s Hermiston Generation Project peak employment is expected to be 450 workers (Oregonian, September 1993).

Both PGE and U.S. Generating Company propose to begin construction sometime in 1994. However, the decision to start construction of the Hermiston Power Project is dependent on BPA’s need for power. At this time Hermiston Power Project sponsors state construction would begin between 1995 and the year 2000 (Hermiston Power Partnership). If peak construction were to occur simultaneously, more than 900 workers could be working in the area.

While not all construction workers would likely be from outside the local area, most construction workers are likely to seek temporary housing in the local area. A number of these workers may bring dependents with them during project construction, although this figure is not expected to be significant.

Natural Gas Supply - Cumulative Impacts

The source of natural gas for the proposed cogeneration plant is from actively producing gas fields in Alberta and British Columbia, Canada. The number of natural gas wells that would be needed to supply PGE requirements was estimated by PGT. The average total yield of Canadian natural gas wells was divided into the total requirements of the Coyote Springs Plant (41 billion BTUs per day). Using this method, the output of 16 gas wells would be used each year by the Coyote Springs Plant (PGT, 1993). For perspective, 4,000 Canadian gas wells were drilled in 1991 and the total number of wells in Canada number in the hundreds of thousands (PGT, 1992). Thus the Coyote Springs Plant would use only a small amount of gas compared to that available in Canada. The world's proven reserves are expected to last approximately 58 years at the present consumption rate (*Inside Energy/with Federal Lands, 1993*).

5.2 Impacts of the No Action Alternative

The No Action alternative assumes the Coyote Springs Plant is not built. Impacts reported for the proposed Coyote Springs Plant and associated transmission facilities and the pipeline would not occur, at least not to the same extent and in the same locations. If the No Action alternative is chosen, PGE's need to replace energy lost through closing the Trojan Nuclear Power Plant would not be met.

Two similar cogeneration plants are proposed at Hermiston, Oregon. The proximity of BPA's transmission lines to these plants makes wheeling of power over BPA's lines almost certain. Surplus capacity on BPA's transmission lines would still be used under the No Action alternative.

As the need for additional power resources would remain under the No Action alternative, PGE would most probably build a generation plant of similar size and type at a different location. PGE could also acquire an equivalent amount of energy from independent power producers. Either option appears likely, considering that two very similar generation plants have been proposed at Hermiston, Oregon, and energy produced by combustion turbines is cost-effective.

PGE's investment in the Coyote Springs Project would be lost under the No Action alternative, as would the time committed to this proposal. Development of another generation proposal would take several years to reach an equal level of refinement. In the interim, PGE would need to acquire power during periods when demand exceeds their energy resources, as was the case in winter 1992-1993. The cost of power acquired during winter peaks is high, which would increase costs to PGE's customers.

To Chapter 6

3. Proposed Action and Alternatives

A number of actions, each an integral part of an overall action collectively called the Coyote Springs Cogeneration Project, are described below. More extensive descriptions for actions that have environmental consequences are provided later in this section.

3.1 Proposed Action

The BPA/PGE Transmission Agreement Would be Revised - BPA proposes to revise its general transmission agreement with PGE to establish Coyote Springs Plant as a point of interconnection for wheeling services. BPA and PGE currently have a transmission agreement through which PGE's power is delivered over BPA transmission lines. If BPA decides to wheel power from the plant, this agreement would be revised and authorized. The revised agreement would cover wheeling for power from the first combustion turbine at the plant. The timing of the second combustion turbine is uncertain. If PGE decides to complete the second combustion turbine, BPA will evaluate the transmission system, and provided sufficient capacity exists, modify the transmission agreement again. If BPA determines that it does not have sufficient transmission capacity to integrate the second unit, a range of options would be considered. Solutions would range from providing non-firm service (no new facilities), to building new transmission or substation facilities. Supplemental environmental analysis would be undertaken if new facilities are proposed.

BPA's Transmission System Would be Modified - BPA proposes to modify its transmission system to connect Phase I of the new Coyote Springs Cogeneration Plant to BPA's main transmission grid. A transmission line tap and loop line is proposed to connect the plant with BPA's McNary-Slatt 500-kV transmission line. Microwave communication facilities to connect the plant with the existing network that operates BPA's transmission system would be installed at the plant and other remote sites.

PGE Would Build a 440 aMW Cogeneration Plant - PGE proposes to build a 440 aMW cogeneration plant on a site within the Port of Morrow (Port) Industrial Park near the City of Boardman, Oregon. The project would be built in phases. The first combustion turbine (220 aMW) would be built as quickly as possible. Timing for the second combustion turbine is uncertain. Associated facilities that would be installed at the plant site include an electrical substation, water storage tanks, cooling towers, workshop, warehouse and administrative offices.

PGE Would Design and Build a 500-kV Loop Line - PGE also proposes to build a ***double-circuit*** 500-kV transmission ***loop*** line from the ***tap*** point on BPA's transmission line to the Coyote Springs Plant, a distance of about 2.4 km (1.5 miles). Map 1 provides an overview of

(Map 2 missing)

the area and BPA's existing transmission line route. Map 2, an aerial photograph of the Coyote Springs Project area, shows the proposed locations for these facilities. Upon energization of the Coyote Springs Plant, ownership of the transmission loop line would be transferred to BPA. BPA would then own, operate and maintain the transmission line.

PGT Would Build a Gas Line to the Plant - PGT proposes to construct a 29.8-km (18.5-mile), 30-cm (12-inch) pipeline from PGT's main transmission line which runs from near the Canadian/Idaho border to Malin, Oregon. The proposed route for the gas pipeline is shown on Map 1. The purpose of the Coyote Springs Extension is to enable PGT to transport 41 billion ***British thermal units (BTUs)*** per day of natural gas to the proposed Coyote Springs Cogeneration Plant.

BPA Would Charge PGE for Transmission Wheeling Services - If the proposal is completed, power would flow from the Coyote Springs Plant into the BPA system and west to one or more points of delivery in PGE's service area. PGE would pay BPA for wheeling power from the Coyote Springs Plant to its load. If PGE pays for any portion of the cost of the new BPA-owned transmission facilities, BPA would reflect this contribution in the rate development process. Any cost associated with these facilities that is not paid by PGE would be recovered in the rates from all transmission system network users.

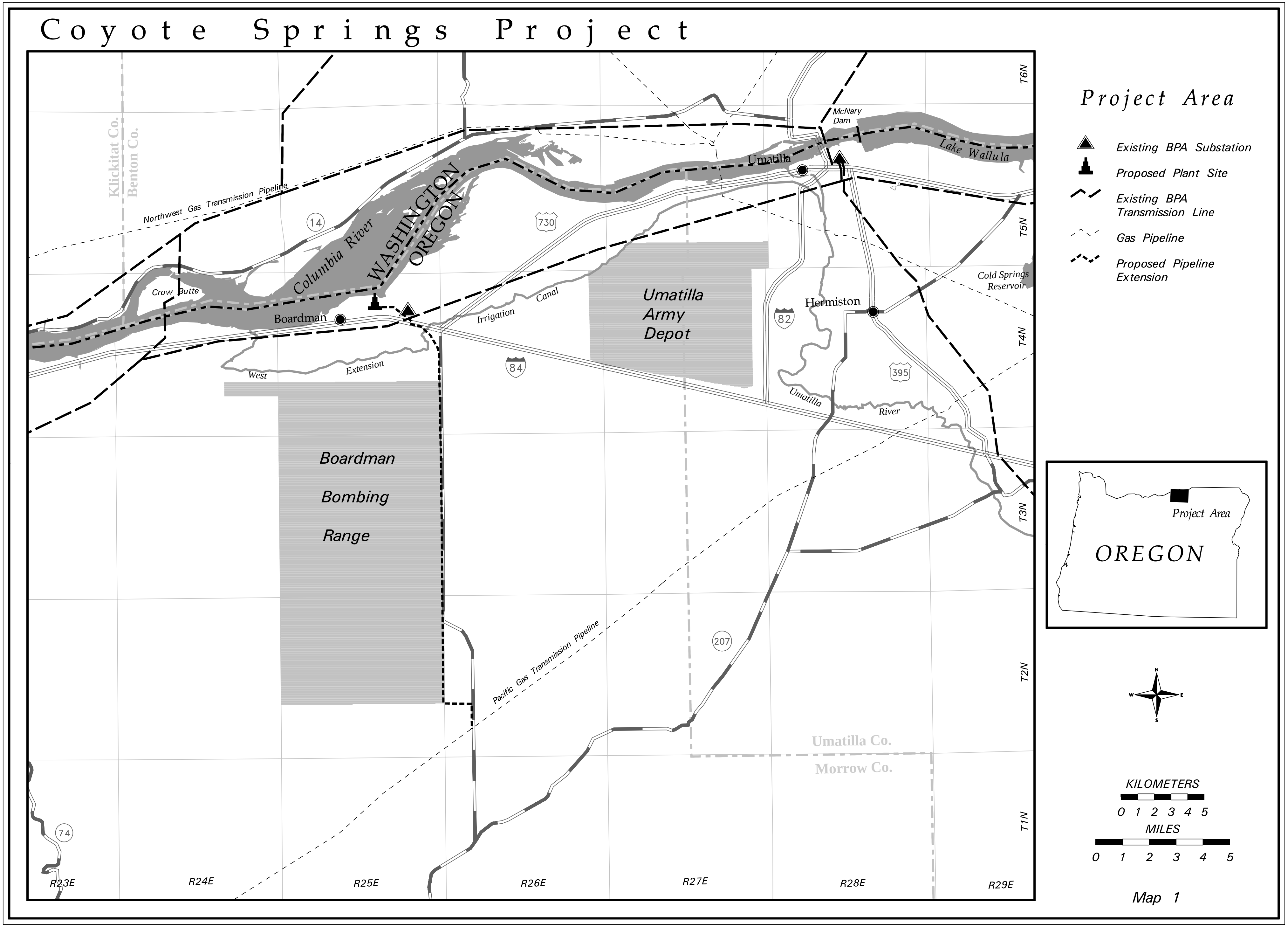
3.1.1 How the Proposed Action was Defined

The Coyote Springs Cogeneration Project was conceived in 1990 by Power Link, a subsidiary of PGE. In 1991, PGE offered output from the project to BPA under the Competitive Resource Acquisition Pilot Program in response to BPA's Request for Proposals for 300 aMW of ***firm energy***. BPA received resource proposals totalling 5,209 aMW of generation and 116 aMW of conservation. BPA did not select PGE's proposal.

In the period from November 1991 through August 1992, PGE conducted an extensive public process to develop their 1992 Integrated Resource Plan. Environmental considerations were an important consideration in development of the plan. Environmental organizations and individuals participated in an advisory group, a public policy group and in a wide range of public involvement caucuses and focus groups. In a summary of the 1992 Integrated Resource Plan, PGE lists four principles that underlie the plan: energy efficiency, cost-effectiveness, flexibility and environmental stewardship. A summary of alternate energy resources included in PGE's preferred resource strategy is provided in Section 2.1.

BPA has decided to limit its examination of overall alternatives to the proposed action and the no action alternative as it considers other resources "unreasonable" as defined in CEQ's NEPA Regulations. BPA's letter to the Environmental Protection Agency (see Chapter 9) provides added information on this topic. (See PGE's 1992 Integrated Resource Plan for additional information on PGE resource alternatives.)

Map 1. Project Area.



In early 1993, with their 1992 Integrated Resource Plan complete, PGE decided to proceed independently with the Coyote Springs Cogeneration Project to partially replace energy formerly provided by Trojan. An existing BPA transmission line corridor passes near the proposed plant site. PGE has requested transmission wheeling services from BPA to deliver energy from Phase I of the proposed project to the Portland, Oregon metropolitan area. BPA electrical system planners evaluated the transmission system and determined there was surplus capacity under most operating conditions to provide wheeling services for generation from the first of the two turbines proposed.

Because BPA will not acquire energy from the project, this EIS does not consider other generation resources, load shaping, fuel switching or conservation.

3.1.2 Location of the Proposed Project

The proposed project will be east of the City of Boardman, Oregon in the northern half of Section 10, Township 4 North, Range 25 East of the Willamette Meridian in Morrow County, Oregon. The plant would be within the Port of Morrow Industrial Park, about 190 m (625 ft.) south of the Columbia River.

The cogeneration plant will be on an approximately 9-ha (22-acre) site within the Port of Morrow Industrial Park. The site is bordered on the west by Ullman Boulevard, on the north by the Union Pacific Railroad, on the east by a Port water storage pond and on the south by a gravel road owned and maintained by the Port.

The proposed double-circuit 500-kV transmission loop line would exit the plant substation and run east about 91 m (300 ft.) north and parallel to Umatilla Electric Cooperative's transmission lines, to an angle point within an existing concrete batch plant site. From this point the loop line would travel in a southeasterly direction to BPA's existing transmission corridor. The new transmission loop line interconnects with BPA's McNary-Slatt 500-kV transmission line immediately north of Interstate Highway 84 (I-84), just before the transmission corridor crosses the highway.

PGT's proposed pipeline route follows part of the eastern border of the Boardman Bombing Range (see Map 1). The pipeline crosses I-84 near the transmission line tap and generally follows the transmission loop line route to the Coyote Springs Plant.

3.1.3 The Coyote Springs Cogeneration Project

A detailed description of the Coyote Springs Cogeneration Project was provided by PGE in Exhibit B of PGE's *Application for Site Certificate*, submitted to Oregon’s EFSC on September 16, 1993. PGE's application was modified on January 6, 1994. A summary of the project as described in PGE's application is provided in this section.

Primary Plant Components

Descriptions of plant components as shown on the Coyote Springs Project Plot Plan, Figure 3-1, are provided below. Design specifications for the components are summarized in Table 3-1.

Heat Recovery Steam Generator - The heat recovery steam generators' function is to combine the high pressure and intermediate pressure steam produced by the combustion process to generate additional electric power. One heat recovery steam generator will be provided for each gas turbine generator installed at the plant.

Combustion Turbine Generator - Two General Electric "Frame 7FA" gas turbine generators will be used. Each gas turbine generator will be installed with all auxiliary equipment, including the gas turbine itself, inlet filters, silencer compartment, hydrogen-cooled electrical generator, lube oil coolers, water injection skid, compressor water wash skid, acoustical enclosure, and complete control system.

Steam Turbine Generator - Two steam turbine generators will convert the waste heat recovered in the heat recovery steam generator into electricity. ***Superheated*** process steam will be extracted from each steam turbine generator for process needs. The process steam will be cooled as necessary to provide saturated steam to the industrial user.

Cooling Tower - A multi-cell cooling tower will reject steam cycle heat (by evaporation) from passing through the main condensers and provide cooling water for miscellaneous equipment coolers. The tower will be 18 m (60 ft.) wide, 91 m (300 ft.) long and 12 m (40 ft.) high.

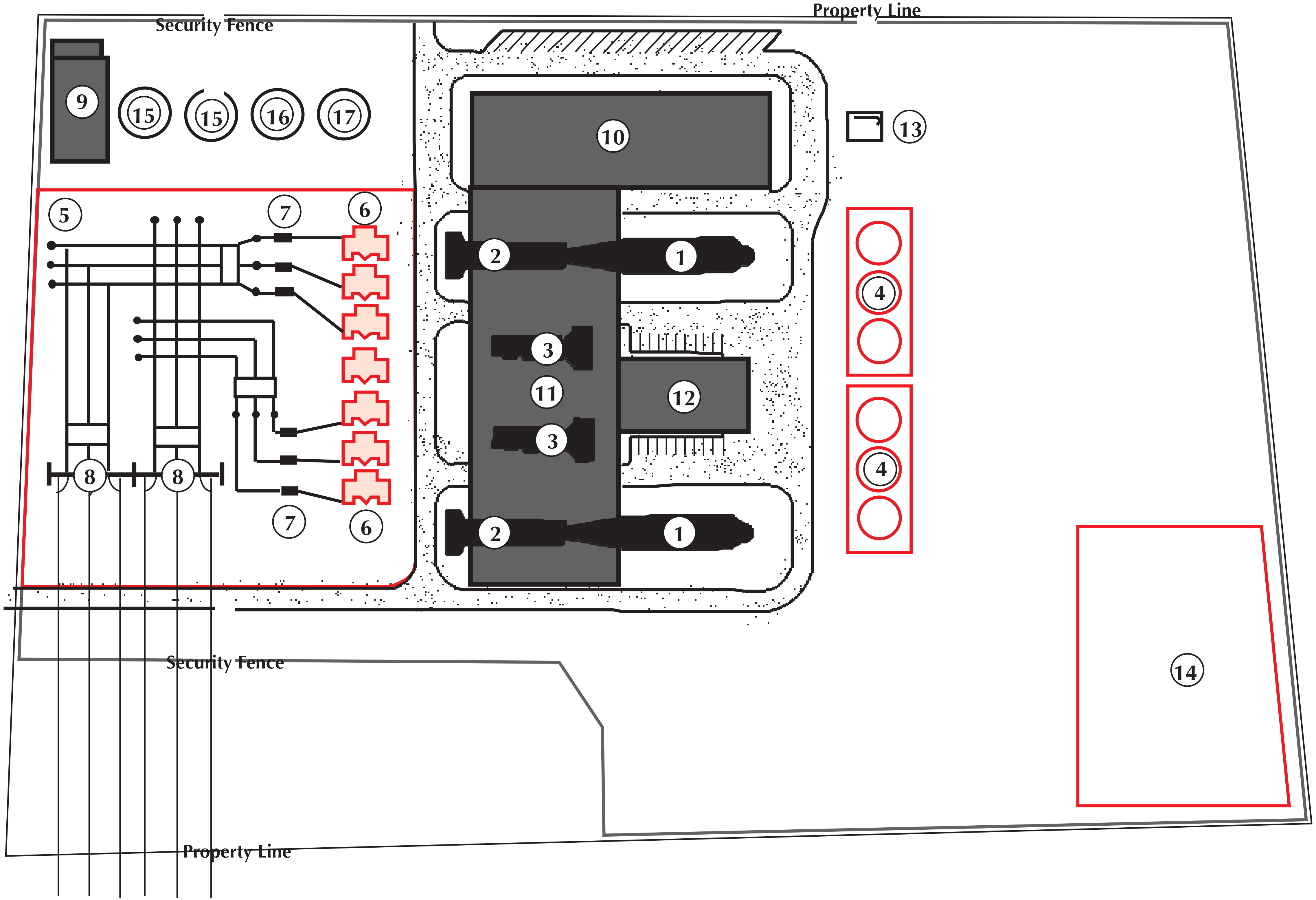
Plant Substation - A PGE substation will be built at the plant site. Substation equipment is described later on pages 3-6 and 3-9.

Auxiliary Transformers - Power for internal plant operation will be obtained through three auxiliary ***transformers***. Each of the two auxiliary transformers have the capability of supplying the station internal load under normal operating conditions. The third auxiliary transformer will have the capability of supplying power to the facility under shutdown conditions, and will provide power from a separate utility, Umatilla Electric Cooperative.

Gas Metering Building - The Gas Metering Building will register how much natural gas is used to fuel the plant. The peak fuel use for the proposed facility is expected to be 1,800 million BTUs per hour for each steam turbine or 18,000 ***therms*** (1 therm = 100,000 BTUs or 95 cubic ft. of gas).

Auxiliary Equipment Building - The Auxiliary Equipment Building will house water treatment equipment, auxiliary boilers, and associated system equipment. Two auxiliary boilers will provide backup to the facility to allow uninterrupted steam to the industrial park.

Figure 3-1. Coyote Springs Cogeneration Plant Plot Plan



Legend

1. Heat Recovery Steam Generator
2. Combustion Turbine Generator
3. Steam Turbine Generator
4. Cooling Tower
5. Plant Substation
6. Transformers
7. Power Circuit Breaker
8. Substation Dead End Structure
9. Gas Metering Building
10. Auxiliary Equipment Building
11. Main Turbine Building
12. Administration/Conrol Building
13. Ammonia Storage Tanks
14. Storm Water Detention Basin
15. Demineralized Water Tank
16. Condensate Storage Tank
17. Fire Water Storage Tank

North

Not to Scale

Source: Ebasco Services Incorporated

Main Turbine Building - The Main Turbine Building will house the two gas turbine generators, the two steam turbine generators, and the turbine auxiliary system equipment. The building will be approximately 24 m (80 ft.) high and contain approximately 4460 sq. m (48,000 sq. ft.).

Administrative/Control Building - The Administrative/Control Building will house the plant control room, administrative offices, electrical room, maintenance shop and warehouse functions. The two-story building will be approximately 930 sq. m (10,000 sq. ft.).

Ammonia Storage Tanks - Two storage tanks will store 64 m^3 (17,000 gal.) of ammonia at the facility. This amount of ammonia would provide about 40 days of continuous plant operation. The facility will use about 1.9 m^3 (510 gal.) of ammonia per day.

Stormwater Detention Basin - A stormwater detention basin will be constructed in the northeastern corner of the site. Stormwater from building roof drains and outdoor plant areas will be discharged to the Port's process water agricultural recycling system after first passing through the stormwater retention basin. The basin will have a surface area of about 1860 sq. m (20,000 sq. ft.) and will have an impervious liner to prevent leaching into the ***groundwater***.

Demineralized Water Tank - Demineralized water will be used at the facility for makeup to the steam cycle. Two 1500 m^3 (400,000 gal.) demineralized water tanks will be on-site.

Condensate Storage Tank - Condensate produced from steam will be stored in a single 1700 m^3 (450,000 gal.) storage tank on the site. Approximately 50 percent of the process steam export is expected to be returned as condensate to the facility for reuse in the steam cycle.

Fire Protection Water Storage Tank - The proposed fire water system is a pumped system. Its primary source is the Port's 7600 m^3 (2 million gal.) fresh water storage tank, about 400 m (1/4 mile) south of the proposed site. The Port's fire water system can be interconnected with the City of Boardman's domestic and fire water system, which has as its source the water tower in the City of Boardman, about 3.2 km (2 miles) away.

Coyote Springs Substation

A substation contains several different kinds of equipment arranged to carry out electrical functions, to minimize safety risk, and to accommodate operation and maintenance. The discussion below describes the equipment that would be installed at Coyote Springs Substation. Figure 3-1 shows the location of the equipment.

Power Circuit Breakers - Breakers automatically interrupt power flow on a transmission line at the time of a fault. Several kinds of breakers have been used in substations. The breakers planned for the proposed substation, called gas breakers, are insulated by special nonconducting gas (sulfur hexafluoride). Small amounts of hydraulic fluids are used to open and

Table 3-1. Major Project Components.

Plant Components	Quantity	Size/Dimensions	Other Characteristics
Combustion Turbine Generator	2	Output: 184.4 MW each	Fuel: Natural Gas. Air Emission Controls=Dry-low NOx technology.
Heat Recovery Steam Generator	2	64 m (210 ft.) exhaust stack	Ammonia injection system and selective catalytic reduction systems to reduce NOx emissions.
Steam Turbine Generator	2	Output: 79.3 MW each	Fuel: Natural Gas. Also produces steam for industrial users.
Auxiliary Boilers	2	136,078 kg (300,000 lb.) of steam/hour 55 m (180 ft.) exhaust stack	Fuel: Natural Gas. Produces steam when plant is shut down.
Cooling Tower	2	L= 91 m (300 ft.) W=18 m (60 ft.) H= 12 m (40 ft.)	Mechanical draft towers, two-speed fans force air through the towers, high-efficiency drift eliminators provided, blowdown system to remove buildup of dissolved solids. Uses 8,824 L (2,331 gal.) of water/minute. Blowdown 9,543 L (666 gal.) per minute.
Auxiliary Equipment Building	1	2230 sq. m (24,000 sq. ft.). Height:14 m (45 ft.)	Will house the water treatment and auxiliary boilers.
Main Turbine Building	1	4460 sq. m (48,000 sq. ft.). Height: 24 m (80 ft.)	Will house the combustion turbines and steam turbine generators.
Administrative Control Building	1	Two story building. 465 sq. m (5000 sq. ft.) each story. Height: 9 m (30 ft.)	Will house the control room, administration offices, electrical room, maintenance shop and a small warehouse.
Ammonia Storage Tanks	2	45.4 kL (12,000 gal.) each.	Delivered by truck to the site. Used in NOx emission control system.
Demineralized Water Tanks	2	1514 kL (400,000 gal.) Height: 8.5 m (28 ft.)	Metal tank on concrete foundation. Storage of demineralized water for use in the steam cycle.
Condensate Storage Tank	1	1703 kL (450,000 gal.) Height: 9.1 m (30 ft.)	Metal tank on concrete foundation. Storage of water condensed and returned from steam users.
Fire (Raw) Water Storage Tank	1	1136 kL (300,000 gal.) Height: 6 m (20 ft.)	Metal tank on concrete foundation. On-site storage of well water.
Transmission Components			
Plant Substation and Control House	1	Fenced yard = 195 m x 107 m (640 ft. x 350 ft.)	Outdoor, gravel surfaced, security fenced yard. Termination site for loop line. Step up transformers, power circuit breakers and sectionalizing switches located in the plant substation. The substation control house will house microwave radios, control devices, and metering equipment.
500-kV Single-Phase Step-up Transformers	7	L=12 m (40 ft.) W= 10 m (30 ft.) H=10 m (30 ft.)	The step-up transformers will boost the voltage from that of the generators to 500-kV. Each transformer contains 45,425 liters (12,000 gal. of cooling oil).
500-kV Circuit Breakers	1 initially	L= 12 m (40 ft.) W= 1.5 m (5 ft.) H= 7 m (23 ft.)	Gas insulated circuit breakers automatically interrupt the flow of electrical current. Circuit breakers are necessary to switch transmission lines open or closed for maintenance or outage conditions.
Substation Deadend Towers	2	L= 7.6 m (25 ft.) W= 24.4 m (80 ft.) H= 34.7 m (114 ft.)	Towers within the confines of the substation where incoming and outgoing transmission lines end.
Microwave Tower and Antenna	1	H= 38 m (125 ft.)	Steel structure to elevate microwave antenna to provide line of sight path to BPA's McNary Microwave Station.
500-kV Double-Circuit Transmission Loop Line	1	L=1.6 km (1-mile)	Interconnects with BPA's McNary-Slatt 500-kV line and delivers power from the plant to BPA's transmission system.
Transmission Line Towers	7	H=52 m (170 ft.)	Each transmission tower will carry two circuits (one on each side of the tower). Overhead ground wires will be attached to the top of the tower for lightning protection.
Tap Structure(s)	1	H=52 m (170 ft.)	Will look similar to the loop line towers.
Transmission Line Right-of-way	Easement	W= 45.7 m (150 ft.)	PGE will acquire the right-of-way and deed it to BPA upon completion of the line.
Clearing/Disturbance		930 sq. m (10,000 sq. ft.) at tower sites.	Only tower sites would be cleared of vegetation.

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close the electrical contacts within gas insulated breakers. The hydraulic fluid is the only toxic or hazardous material that will be used.

Transformers - Transformers change voltage. Electricity from the steam turbine generator and the gas turbine generators will be transformed to 500-kV for delivery over BPA's transmission system. Three single phase transformers will be needed for each combustion turbine. An additional single phase unit will serve as a spare transformer. The transformers each contain 45 m^3 (12,000 gal.) of cooling oil. An oil containment liner would be installed to collect and retain oil within the substation should an oil spill occur. Only newly purchased electrical equipment certified as polychlorinated biphenyl (PCB)-free would be installed.

Switches - Switches are devices used to mechanically disconnect or isolate equipment. Switches are normally on both sides of circuit breakers.

Bus Tubing, Bus Pedestals - Power moves within a substation and between breakers and other equipment on ridged aluminum pipes called bus tubing. Bus tubing is elevated by supports called bus pedestals. Buswork within the plant substation would transport the entire plant's power output to an overhead 500-kV line. This transmission line will tap into the existing McNary-Slatt 500-kV transmission line, at a point about 2.4 km (1.5 miles) southeast of the proposed site.

Substation Dead Ends - Dead ends are towers within the confines of the substation where incoming and outgoing transmission lines end. Dead ends are typically the tallest structures in a substation.

Substation Fence - This chain-link fence with razor wire bayonets on top provides security and safety. Space to maneuver construction and maintenance vehicles is provided between the fence and electrical equipment.

Substation Rock Surfacing - An 8-cm (3-inch) layer of rock selected for its insulating properties is placed on the ground within the substation to protect operation and maintenance personnel from electrical danger in the event of substation electrical failures.

Control House - Electric/electronic controls and monitoring equipment for the power system are housed in a building within the substation. Control houses are heated and air conditioned to provide a controlled environment for equipment.

Communication Facilities - BPA has an existing microwave communication network that delivers signals to operate substation equipment from control centers and other remote locations, and to report revenue metering. This network also provides voice communication from dispatchers to substation operators and maintenance personnel. Microwave communications require an unobstructed "line of sight" between antennas. A tower 38 m (125 ft.) high would be constructed at the substation for an antenna aimed toward BPA's existing Roosevelt radio station. New communication equipment will be provided at McNary and Coyote Spring substations as well as within remote radio stations in the communication network.

Cogeneration Process and Output

The proposed plant would burn natural gas and produce electrical energy and useful heat captured as steam. Steam from the facility could be used by food processors within the Port of Morrow Industrial Park. Lamb Weston and Oregon Potato currently process potatoes using steam from in-house gas-fired boilers. PGE anticipates that when the Coyote Springs Plant becomes operational, existing boilers at the potato processors will be shut down. However, the owners of the processing plants may retain the boilers as backup units. Each unit of the Coyote Springs Plant will be able to produce up to 113 tonnes (124 tons) of steam per hour.

Water and Sewer Systems

Water Supply - Water requirements of the proposed plant will be supplied by four existing Port of Morrow wells (Carlson Sumps 1 and 2, and Port Well #3 and Port Well #4). If additional water is needed, the Port has reached an agreement with the City of Boardman for the City to supply up to an additional 7.6 m^3 (2,000 gal.) per minute (PGE, 1993). Information on status and water source of each well is provided in Table 3-2 below.

Table 3-2
Project Water Sources

Primary Water Sources				
Well Name	**Status**	**Permitted Use**	**Permitted Rate**	**Source Aquifer**
Carlson Sump #1 & 2	Existing	Municipal	3.8 cubic meters (1013 gpm)	Alluvial
Port Well #3	Existing	Municipal	3.4 cubic meters (897 gpm)	Alluvial
Port Well #4	Existing	Municipal	2.9 cubic meters (758 gpm)	Basalt
			total: 10.1cubic meters (2668 gpm)	
Backup Water Source				
Well Name	**Status**	**Permitted Use**	**Permitted Rate**	**Source Aquifer**
City of Boardman Ranney Collector	Existing	Municipal	22.8 cubic meters (6030* gpm)	Alluvial
* 2,000 gpm commitment to Coyote Springs Cogeneration Plant				

The maximum amount of water that would be required for the operation of the facility will vary depending on several factors: (1) level of plant operation; (2) cooling tower efficiency; and (3) amount of steam supplied to customers. The maximum amount of water that is required for operation of the facility is 16.5 m^3 (4,350 gal.) per minute. Actual operation of the proposed plant, however, is expected to require considerably less water. On an annual average basis, the proposed project is expected to require approximately 9.5 m^3 (2,500 gal.) per minute (PGE, 1994). Figure 3-2 illustrates how the average annual water flow would be used during operation of the plant. Figure 3-2 reveals that of the anticipated 9.5 m^3 (2,500 gal.) per minute used, 6.3 m^3 (1,660 gal.) per minute will be evaporated into the atmosphere and 2.6 m^3 (690 gal.) per minute will be discharged into the Port of Morrow's industrial wastewater system. Although not shown, 22.7 L (6 gal.) per minute will be routed into the Port's sanitary sewer system, and will then flow into the City of Boardman's sewage treatment facility.

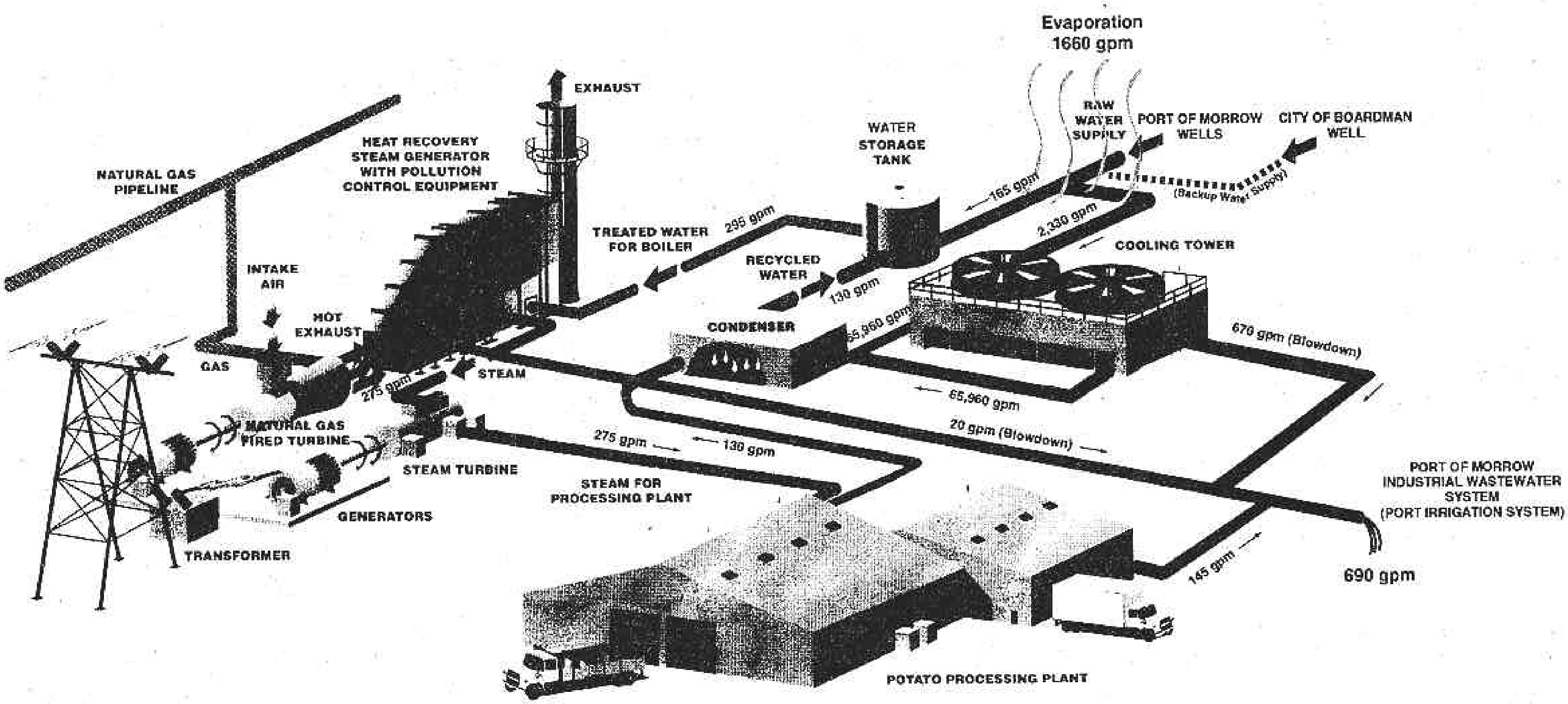
Of the 6.3 m^3 (1,660 gal.) per minute evaporated into the atmosphere from the proposed plant, approximately 4 L (1 gal.) per minute will fall back to the earth as drift. Drift is considered that part of the condensate that condenses on a surface, be it a blade of grass, the exterior of a building or an asphalt roadway.

Well Water Use - Under normal conditions Carlson Sumps 1 and 2 and Port Well #3, which draw water from the shallow ***aquifer*** wells, will provide most of the water needed for operation of the Coyote Springs Plant. These wells will provide makeup water to the cooling water basin and the condenser water system because pure water is not needed. Well water from the ***alluvial*** aquifer will also be used for miscellaneous nonpotable uses such as equipment maintenance and washdown, and fire suppression.

Demineralized Water - Water from Port Well #4 will supply the demineralized water system and potable water uses at the plant. The demineralized water system removes minerals within the raw water, then it is stored in two large tanks. Demineralized water will then be pumped from storage tanks to various services within the plant. A primary use of demineralized water is the replacement of water used in the steam cycle.

Wastewater Disposal - PGE's proposal is to discharge its wastewater to the Port of Morrow industrial wastewater system. The Port of Morrow currently dilutes industrial wastewater from the food processing plants located on Port property with well water and irrigates agricultural feed crops with the dilute mixture. About 2.6 m^3 (690 gal.) per minute of ***wastewater*** will be produced by the Coyote Springs Plant. Wastewater will be from these sources: (1) neutralized demineralized backwash water; (2) neutralized condensate polisher backwash water, and/or (3) cooling tower ***blowdown***.

Coyote Springs Cogeneration Site
Water Balance (Annual Average Flow)



Source: PGE, 1993

Figure 3-2

Plant Operation and Air Pollution Control Equipment

The combustion turbines are each expected to operate an average of 7,760 hours per year, but have the capacity to operate up to 8,760 hours per year. Auxiliary boilers are expected to operate for six weeks each spring while the turbines are shut down for maintenance (during the Columbia River fish flush operation). Auxiliary boiler operation is expected to total 2,000 hours but could be as high as 8,760 hours if a major turbine failure occurs.

The proposed facility will use best available control technology (***BACT***) to minimize pollutants emitted in significant quantities. Specific controls proposed for use at the Coyote Springs Plant are discussed below.

Oxides of Nitrogen (NO_x) - ***NO_x*** are formed by two different mechanisms during fossil fuel combustion: when nitrogen normally present in the atmosphere combines with free oxygen in the presence of heat (nitrogen fixation); and when nitrogen in the fuel stock is oxidized during combustion. Natural gas contains insignificant amounts of nitrogen, so most NO_x emitted will be from free nitrogen fixation. The majority of NO_x emitted from combustion processes is nitrous oxide (NO); the rate of conversion to nitrogen dioxide (***NO_2***) depends on the oxidizing potential of the atmosphere.

NO_x emissions will be controlled both in the turbine exhaust and in the stack. NO_x emissions from the turbines will be minimized by combining natural gas with air before combustion, thereby inhibiting a discrete flame front and reducing flame temperature. This technique is called dry low NO_x technology. Dry low NO_x technology will bring the NO_x emissions down to 25 parts per million (***ppm***). The NO_x remaining in the flue gas will be reduced to nitrogen (N_2) and water by ammonia injection at the heat recovery steam generating units through a process called selective catalytic reduction. Selective catalytic reduction can be operated at varying degrees of NO_x destruction. The more NO_x removed, the more ammonia released to the atmosphere (ammonia slippage). Eighty-two percent of the NO_x will be removed. This results in an ammonia slippage of between 10-20 ppm. A 10 ppm ammonia slip corresponds to 11.2 kg (24.4 pounds)/hour from each turbine or 177 kg (390 pounds)/8 hours. Operating at this level will bring NO_x emissions down to 4.5 ppm.

NO_x emissions from the auxiliary boilers will be controlled through the use of low NO_x burners and flue gas recirculation. Low NO_x burners have multiple combustion zones that either suppress the excess air in the primary combustion zone or control flame temperature. Flue gas recirculation reduces both the peak flame temperature and the oxygen concentration in the combustion air; both reduce NO_x formation. Together these two control technologies will reduce NO_x emissions to 40 ppm.

Carbon Monoxide (CO) - ***CO*** emissions from the turbines and from the auxiliary boilers will be minimized by the use of good combustion controls. These controls will reduce CO emissions to 15 ppm.

Sulfur Dioxide (SO_2) - The sulfur concentration in natural gas is very low (0.03-0.19 ***grains*** per 2.8 m^3 (100 cubic ft.). (California Energy Commission, 1992 and PGE, 1993). Therefore, SO_2 emissions from natural gas combustion will be negligible and are limited by the facility's air contaminant discharge permit and by the sulfur content of natural gas. Good combustion controls reduce the amount of fuel required and thus limit SO_2 emissions.

Carbon Dioxide (CO_2) - The proposed facility will use the following controls to minimize CO_2 emissions: maximize efficiency, use natural gas rather than a fuel with higher carbon content, and provide steam to local food processors.

Particulate Matter - Particulate matter is generated by several mechanisms: (1) incomplete combustion; (2) nitrate (NO_3-) and sulfate (SO_3-) formation from SO_2 and NO_x; and (3) by the formation of ammonia salts during selective catalytic reduction of NO_x. Most ***particulates*** emitted from the facility will be generated from the selective catalytic reduction process. Particulate emissions from the turbines and from the auxiliary boilers will be controlled by using clean fuel (natural gas) and good combustion controls. Traditional particulate control technologies such as bag houses and scrubbers cause air pressure to drop too much for turbine operation. Projected emissions from the facility are expected to amount to 71 tonnes/year (78 tons/year).

Air Toxics - Air toxics come from impurities in the fuel, injection water, intake air and from incomplete combustion. To discourage air toxic emissions, demineralized injection water and prefiltered intake air will be used. In addition, the facility will burn natural gas (a low ash fuel), which will encourage complete combustion. Good combustion controls will also be used to limit air toxic emissions.

Continuous Emission Monitoring - In addition to the pollution controls mentioned above, the two heat recovery steam generating unit stacks will each be equipped with continuous emission monitoring systems. These systems will record NO_x, CO and O_2 levels in stack emissions and provide historical evidence that emissions meet permit requirements (PGE, 1993).

Solid Waste and Toxic or Hazardous Materials

Estimated quantities of solid waste material expected to be produced during plant operation are listed in Table 3-2. Some solid waste material is classified as ***hazardous*** and would need careful handling and disposal to protect public health and safety. Section 5 describes these materials and special handling plans for them.

The cogeneration plant would use and store several toxic substances. Table 3-3 lists the materials that will be used at the Coyote Springs Plant. These substances are discussed in Section 5.

Table 3-3
Coyote Springs Cogeneration Plant - Description of Solid Waste Materials

Waste Stream	Classification	Amount	Frequency	On-Site Treatment	Storage	Off-Site Treatment/ Disposal
Used Lead Acid Batteries	Hazardous	2-cells	Once Per Year	None	90-days	Recycle to Battery Vendors
Spent SCR Catalyst Material	Hazardous	255-345 cu. m (9,000-12,000 cu. ft.)	Once Every 3-5 Years	None	None	Ship to Hazardous Waste Disposal Facility
Oily Rags, Oil Absorbent Material	Hazardous	<1 cu. m (20 cu. ft.)	Once Per Month	None	90-days	Ship to Hazardous Waste Disposal Facility
Spent Cation Demineralizer Resins	Nonhazardous	48 cu. m (1,700 cu. ft.)	Once Every 8-10 Years	None	None	Recycle to Resin Vendors
Spent Anion Demineralizer Resins	Nonhazardous	45 cu. m (1,600 cu. ft.)	Once Every 4-5 Years	None	None	Recycle to Resin Vendors
Office Waste Materials (Trash and Garbage)	Nonhazardous	>9 kg/day (>20 lb./day)	Daily	None	None	Ship to Sanitary Landfill

Table 3-4
Coyote Springs Cogeneration Plant - Toxic Fluids, Chemicals and Gases

Material Type	Purpose	Use/Time (Approximate)	Storage Volume	Storage Method	Delivery Method
Fuels					
Natural Gas	Principal Fuel	41 billion BTU's/day	None	None	Pipeline
Chemicals					
Sulfuric Acid	Water Treatment	2 cubic meters/day (570 gal./day)	129 cubic meters (34,000 gallons)	Steel Tank	Truck
Sodium Hydroxide (Caustic Soda)	Water Treatment	1.9 cubic meters/day (67 gal./day)	38 cubic meters (10,000 gallons)	Steel Tank	Truck
Phosphate/pH Control Chemical	Boiler Water Treatment	0.05 cubic meters/day (12 gal./day)	30 cubic meters (8,000 gallons)	Steel Tank	Truck
Neutralizing Amine	Corrosion Control-Boilers	0.01 cubic meters/day (3 gal./day)	.75 cubic meters (200 gallons)	Tank	Truck
Oxygen Scavenger	Corrosion Control-Boilers	0.02 cubic meters/day (6 gal./day)	1.5 cubic meters (400 gallons)	Tank	Truck
Anhydrous Ammonia	Air Pollution Control	1.6 cubic meters/day (425 gal./day)	32 cubic meters x 2 (8,500 gallons x 2)	Pressurized Tanks	Truck
Sodium Hypochlorite Bleach	Cooling Water Treatment	0.2 cubic meters/day (45 gal./day)	11.4 cubic meters (3,000 gallons)	Tank	Truck
Corrosion/Scale Inhibitor	Cooling Water Treatment	0.4 cubic meters/day (115 gal./day)	26.5 cubic meters (7,000 gallons)	Tank	Truck
Gases					
Gaseous Hydrogen	Generator Coolant	22.7 cubic meters/day (800 cu ft./day)	7.4 cubic meters x 100 (260 cubic feet x 100)	Pressurized Bottles	Truck
Carbon Dioxide	Generator Purging	NA	NA	Steel Cylinders	Truck
Lubricants/Coolants					
Lubricating Oil	Turbine Lubrication	NA	208 liters (55-gallon Drums)	Metal Drums	Truck
Hydraulic Fluid	Equipment Operation	NA	208 liters (55-gallon Drums)	Metal Drums	Truck
Insulating Oil	Electrical Equipment	NA	208 liters (55-gallon Drums)	Metal Drums	Truck
Misc. Lubricants	Equipment Operation	NA	208 liters (55-gallon Drums)	Metal Drums	Truck
Cleaning / Degreasing Agents	Equipment Cleaning	NA	208 liters (55-gallon Drums)	Metal Drums	Truck

3.1.4 Transmission Integration Facilities

Proposed Electrical Plan - Plan 5

Power from the Coyote Springs Cogeneration Plant would be integrated into BPA's transmission grid by tapping the existing 500-kV transmission line between McNary Substation and Slatt Substation. A new double-circuit 500-kV loop line would be built from the tap point to the Coyote Springs Substation, located at the plant. Switches and power ***circuit breakers*** would be installed in the Coyote Springs Substation. Microwave communication facilities to accommodate system operation would also be installed.

Initially, only one circuit breaker would be installed at Coyote Springs. When the second phase generation units are built, additional protection facilities will be installed. The estimated cost of Plan 5 is $11 million (including transmission line costs).

Proposed facilities in Plan 5 are described in greater detail below. Information about substation and transmission facilities is also provided in Table 3-1.

Coyote Springs Substation

PGE proposes to design and build the Coyote Springs Substation at the southern edge of the plant site. The substation will be built in two stages corresponding to development of the two generators. BPA and PGE engineers will coordinate closely during substation design. Substation design will meet BPA standards. (See Section 3.1.3.)

Double-Circuit 500-kV Transmission Loop Line

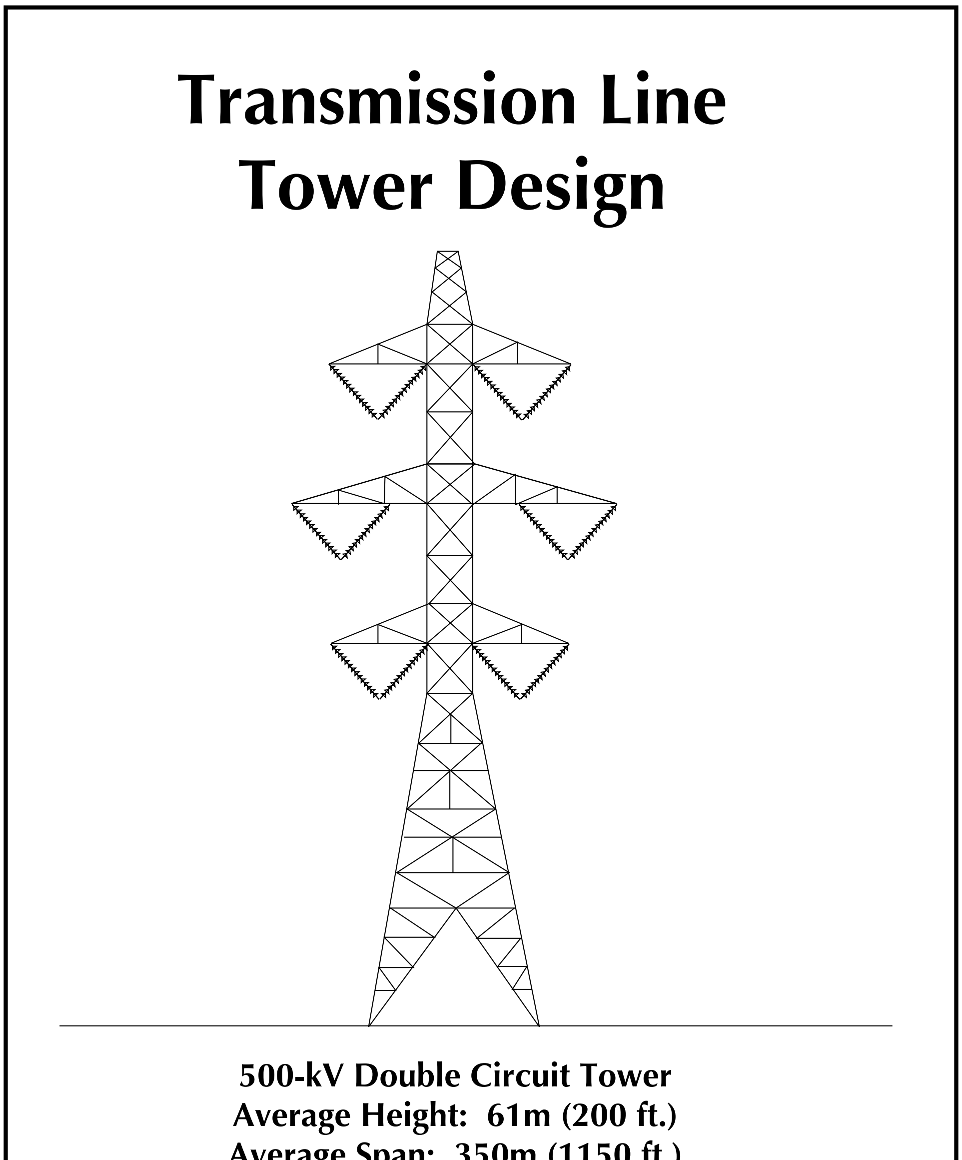
The double-circuit 500-kV transmission line will exit the plant substation and run east about 40 m (130 ft.), parallel to and north of Umatilla Electric Cooperative's existing 115-kV and 12.47-kV transmission lines to a point within an existing concrete batch plant. From this point the transmission line would turn and continue southeast to BPA's McNary-Slatt 500-kV transmission line. The double-circuit line would connect with the existing line at a point immediately north of I-84. The route of this line and tentative transmission ***tower*** sites are shown on Map 2.

Figure 3-3 illustrates a typical ***lattice steel*** 500-kV double-circuit transmission line tower. One line composed of three ***conductor*** groups, called phases, is on each side of the towers. Each phase will have three steel reinforced aluminum conductor cables. Overhead groundwires would be strung between the tops of the towers to reduce damage from lightning strikes.

Alternate Transmission Line Routes - The proposed Coyote Springs Cogeneration Plant site is very close to BPA's transmission line corridor. The tap site is located as close to the plant site as possible without requiring a crossing of I-84. Tower locations between the tap point and the plant site were selected to be accessible from existing access roads and to avoid existing wetlands.

An alternate alignment to minimize public exposure to electromagnetic fields was defined using electromagnetic field (**EMF**) calculations. This alignment passed east and north of the concrete plant building and workshop. However, it required building road access and several towers within a wetland area bordering Messner Pond. This alignment was dropped when it was discovered that the concrete plant and workshop would be relocated after the plant is built and when the aggregate quarry (next to the plant site) ceases operation.

Figure 3-3
Transmission Line Tower Design



BPA Transmission Line Tap

The existing 500-kV transmission line between BPA's McNary Substation and BPA's Slatt Substation would be interconnected with the new double-circuit loop line built by PGE. A dead-end tower would be built within the existing line to break the line into two segments. Each line segment would cross over two 230-kV lines and be attached to opposite sides of the new double-circuit line. The locations of the tap and tap line towers are shown on Map 2.

3.1.5 PGT Natural Gas Extension Pipeline

PGT proposes to construct a 29.8-km (18.5-mile), 30-cm (12-inch) pipeline from PGT's main transmission system (see Map 1). PGT has a contract with PGE to supply 41 billion BTUs of natural gas daily to the Coyote Springs Plant. The Coyote Springs Extension Pipeline is sized to carry about 100 billion BTU/day (enough for both units at Coyote Springs). The gas delivery pressure would be approximately 42 kg per square cm (600 pounds per square inch [psi]). No new compressor station would be installed on the extension.

Other pipeline facilities would include main line valves at each end of the extension and a meter station located at the cogeneration plant site. Because the proposed pipeline route would parallel existing roads for most of its distance and because of intersecting county roads, no new access roads are proposed. Local utilities would provide power to the meter station; no new supply lines would be needed. PGT proposes to rent up to 8 ha (20 acres) in the Port of Morrow Industrial Park for a temporary pipe off-loading and storage yard and a construction staging area to support the extension construction.

The permanent pipeline right-of-way would be a 11-m (35-ft.) wide easement, except where no easement is required with an existing road right-of-way. A temporary working strip, typically 9 m (30 ft.) wide, would be required during construction. The total area disturbed during construction (impact area) would be 20 m (65 ft.) wide, except on lands with special width requirements, such as canal and road/highway crossings. The permanent pipeline right-of-way would be maintained for the life of the project which is expected to exceed 30 years.

The proposed pipeline would designed and constructed in accordance with U.S. Department of Transportation Code of Federal Regulations (CFR) (49 CFR 192). Standard open cut pipeline construction methods would be used, except in several areas: where the proposed route would cross Wilson Road and I-84 to avoid traffic disruption, and where it would cross the West Extension Irrigation Canal to avoid facility damage and loss of irrigation water. Trenchless construction techniques (boring) would be used in these areas.

The pipeline would be placed in an excavated trench dug at a standard depth of 1.5 m (5 ft.) allowing for 30 cm (1 ft.) of padding material, the pipe, and 1 m (3 ft.) of cover. The standard excavation depth does not apply in the areas where trenching would not be used.

PGT used criteria for route selection that avoided adverse environmental impacts to the extent possible. In addition to the mitigation measures described in Section 5.1.3, PGT will construct the project implementing the following general mitigation measures:

- Notify and work with each property owner before construction to minimize conflicts with existing land uses. Before construction begins, landowners will be advised of fence openings and disturbances to range or farmlands, improvements, and other range or farmland use-related activities.

- Obtain all applicable permits, and work with local and state governments to avoid land use conflicts.

- Develop, monitor, and maintain an effective erosion control and restoration program.

- Develop and implement a Spill Prevention Control and Countermeasure Plan (SPCC) to minimize spills and ensure proper handling of all hazardous materials in compliance with state and Federal regulations.

- Implement an appropriate fire prevention and suppression program.

- Implement and maintain an environmental training program for all management, inspection, supervisory, and crew personnel.

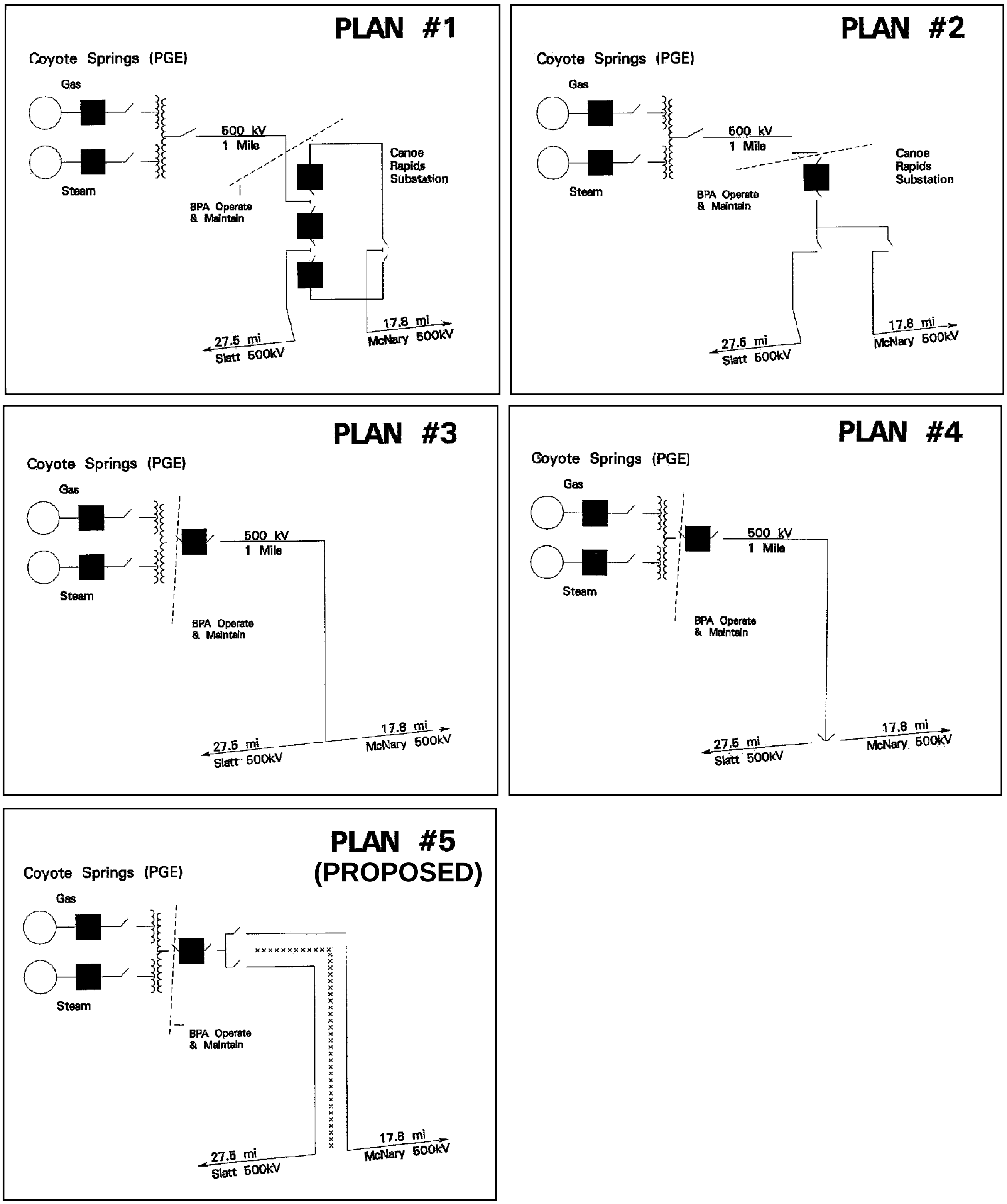
3.1.6 Electrical Plans Considered but Dropped

Five different electrical plans were considered for integrating power from Coyote Springs Plant into BPA's transmission grid (see Figure 3-4). Each plan included tapping BPA's McNary-Slatt 500-kV transmission line, and building a new 500-kV transmission line from the tap to the Coyote Springs Plant. The plans differ in degree of protection against transmission line-caused plant shut downs and initial cost. The proposed plan is Plan 5. Plans 1-4 each have undesirable aspects, such as costs or environmental concerns, which caused them to be dropped from consideration. These plans are described below.

Plan 1 - Facilities added include: (1) a 500-kV double-circuit tap to BPA's McNary-Slatt 500-kV line; (2) a new substation containing three 500-kV circuit breakers and communication facilities; (3) a single-circuit 500-kV transmission line from the substation to the Coyote Springs Plant Substation.

Plan 1 provides the greatest operational flexibility and maximum protection against transmission line outages that would cause the Coyote Springs Plant to shut down. Plan 1 would have the highest cost at $13.4 million excluding transmission line costs.

Figure 3-4
Electrical Plans Considered



Plan 2 - Plan 2 differs from Plan 1 in one respect; only one circuit breaker is provided at the substation. This plan does not protect against transmission-caused shut downs of the Coyote Springs Plant. Costs for Plan 2 are $9.7 million excluding transmission line costs.

Plan 3 - Plan 3 does not require a new substation. A tap to BPA's 500-kV McNary-Slatt line is required. A single-circuit 500-kV line would be built from the tap to the Coyote Springs Plant Substation. Existing circuit breakers at BPA's McNary and Slatt Substations, and a new 500-kV breaker at the Coyote Springs Substation would form what is called a three terminal line. These breakers de-energize the line if the line is disturbed by lightning strikes or other natural events, or during line maintenance.

This plan minimizes the cost of transmission facilities. Costs for Plan 3 are $5 million excluding transmission line costs; however, this plan does not protect against transmission-caused shut downs of the Coyote Springs Plant.

Plan 4 - Plan 4 is similar to Plan 3, but adds line sectionalizing switches at the tap point. The switches provide the ability to take a portion of the McNary-Slatt line out of service for maintenance and still allow the Coyote Springs Plant to operate. The plant and line would need to be de-energized before these switches could be operated, requiring a plant shut down. As in Plans 2 and 3, no protection is provided for transmission line disturbances that could cause the Coyote Springs Plant to shut down.

I-84 is close to the tap/switch site. Switch installations for 500-kV lines look similar to a substation and would be visible from I-84.

3.2 No Action Alternative

The No Action alternative would remove the potential impacts from the Coyote Springs Plant and related transmission facilities at the proposed site. PGE would not meet its need to find replacement power for the loss of its Trojan Nuclear Plant. Because PGE needs to find replacement power, PGE would build a similar plant at a different location or purchase power from independent power producers.

If the Coyote Springs Plant is not built, surplus capacity on BPA's transmission lines would likely be available for other power plants. Future upgrades of the transmission system to increase capacity through the area may be able to be deferred longer.

To Chapter 4