Final Environmental Impact Statement
Plymouth Generating Facility
Plymouth, Washington

Prepared by:
Benton County, Washington
Bonneville Power Administration (DOE/EIS 0345)

June 2003

To: People Interested in the Plymouth Generating Facility

Enclosed is the Final EIS for the Plymouth Generating Facility. The Draft EIS was published in August 2002, and comments were received through October 5, 2002. The Final EIS contains revisions to the Draft EIS and our responses to public and agency comments on the Draft EIS. This letter briefly describes the Final EIS, outlines our next steps, and tells how to contact us if you have questions.

The Final EIS is *abbreviated*, consisting of an updated summary and project description (Chapter I), other revisions to the Draft EIS (Chapter II), copies of all comments received on the Draft EIS, and our written responses to those comments (Chapter III). This Final EIS also identifies Bonneville Power Administration's preferred alternative, which is the Proposed Action. This Final EIS should be used as a companion document to the Draft EIS, which contains the full text of the affected environment, environmental analysis, and appendices.

Process/Schedule:

All comments on the Draft EIS and our responses to those comments are published in this Final EIS. Where appropriate, the Final EIS notes where any changes were made to the proposal or analysis in response to comments. Now that the Final EIS is published, Benton County will process the Conditional Use Permit Application and BPA will issue a Record of Decision outlining whether and how we will proceed with the project.

For More Information:

Copies of the Draft EIS, Summary, and Final EIS are available by contacting Benton County Planning at (509) 786-5612 or BPA at 1-800-622-4520. The DEIS Summary is posted on BPA's website at *www.efw.bpa.gov* – click on Environmental Planning/ Analysis, then on Active Projects. If you have any questions about the proposal or the Draft EIS, please call Michael Shuttleworth at (509) 786-5612 or Gary Beck toll-free at 1-888-276-7790, or e-mail Michael Shuttleworth at *mike.shuttleworth@co.benton.wa.us* or Gary Beck at *gobeck@bpa.gov*. Thank you for your interest in our work.

Sincerely,

Terry A. Marden, Director
Benton County Planning
and Building Department

Gary O. Beck
Project Manager
Bonneville Power Administration

Plymouth Generating Project
Final Environmental Impact Statement (DOE/EIS-0345)

Responsible Agencies: Benton County, Washington (Washington State Environmental Policy Act [SEPA]); U.S. Department of Energy; Bonneville Power Administration (BPA) (National Environmental Policy Act [NEPA]).

Title: Plymouth Generating Facility (PGF)

Abstract: Plymouth Energy, L.L.C. proposes to construct and operate a 307-megawatt (MW), natural gas-fired, combined cycle power generation facility that would be interconnected with BPA's regional transmission system. The PGF would be located on a 44.5-acre site, 2 miles west of the rural community of Plymouth in southern Benton County, Washington. The project would be interconnected to BPA's proposed McNary-John Day 500-kilovolt (kV) transmission line approximately 4.7 miles west of BPA's McNary Substation. Natural gas would be supplied to the project by an 800-foot pipeline lateral from the Williams Northwest Gas Pipeline Company Plymouth Compressor Station, which is located adjacent to the project plant site. Water for project use would primarily be supplied from a groundwater well whose perfected rights have been transferred to the project. Wastewater from project operations would be supplied to the neighboring farm for blending and use for crop irrigation.

This environmental impact statement (EIS) evaluates the environmental effects of the proposed project and determines if any environmental impacts would result. The environmental evaluation of the proposed project includes the proposed power generation facility, which includes the plant, gas pipeline, and water supply/wastewater pipeline; high voltage transmission interconnection; and access road.

Alternatives to the Proposed Action evaluated in this EIS include the transmission interconnection alternatives, an access alternative, and the No Action Alternative (project is not constructed and operated). The two transmission interconnection alternatives are (1) an interconnection to BPA's 230/345-kV transmission line located in the same physical location as the proposed BPA 500-kV line, and (2) a direct interconnection to BPA's McNary Substation via an existing Benton Public Utility District line in combination with existing BPA lines that connect to this substation. The access alternative includes one alternate access road for use during project construction, and another alternate access road for use during project operation.

Proposal's Sponsor: Plymouth Energy, L.L.C.

Date of Implementation: Construction of the PGF is scheduled to begin in the third quarter of 2003 and is projected to be completed 24 months later. Construction of the transmission interconnection and gas supply pipeline would occur in 2004.

List of Possible Permits, Approvals, and Licenses: The PGF would require a Conditional Use Permit and grading and building permits from Benton County, a Notice To Construct air permit from the Benton Clean Air Authority, a Hydraulic Project

Approval from Washington Department of Fish and Wildlife, and permits for stormwater and wastewater disposal during construction and operation from the Washington State Department of Ecology. Consultation with the Federal Aviation Administration for height obstructions is required, as is approval of the BPA to interconnect with the BPA transmission system.

Authors and Principal Contributors to the EIS: URS Corporation, working under the direction of Benton County and the BPA, is the principal author. MFG, Inc. is the principal contributor to the air quality and visibility analysis, and the noise analysis.

Date of Final Lead Agency Action: With completion of the Final EIS (FEIS) and its certification by Benton County (SEPA), the County can complete its review process for issuance of the Conditional Use Permit and subsequent building and other permits. These approvals are expected in the third quarter of 2003. Following completion of the FEIS by BPA (NEPA), BPA can issue a Record of Decision (ROD) with regard to interconnection of the PGF to the BPA transmission system. The ROD is expected to be issued in 2003.

For additional information on the DEIS, or to request additional copies of the DEIS or FEIS, please contact:

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Location of Background Information: You may access the DEIS Summary and the FEIS and find out more information about the project on the BPA website at www.efw.bpa.gov. Copies of the DEIS (including maps) are available for public review at the following locations:

Umatilla Public Library
911 7th Street
P.O. Box 820
Umatilla, Oregon 97882-0820
(541) 922-5704

Mid-Columbia Library District
55403 S. Olympia Street
Kennewick, WA 99337
(509) 376-4627

Prosser Public Library
902 Seventh Street
Prosser, WA 99350
(509) 786-2533

Cost of Copy to the Public: There will be no cost for the DEIS or the FEIS.

For information on the U.S. Department of Energy NEPA activities, please contact Carol M. Borgstrom, Director, by mail at Office of NEPA Policy and Compliance, EH-42, U.S. Department of Energy, 1000 Independence Avenue, Washington D.C.; or by telephone at 1-800-472-2756; or visit the website at www.eh.doe/nepa.

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ACRONYMS AND ABBREVIATIONS

ACC	air-cooled condenser
ADT	average daily traffic
af/yr	acre-feet per year
ASILS	Acceptable Source Impact Levels
ASME	American Society of Mechanical Engineers
AST	aboveground storage tank
BACT	Best Available Control Technology
BCAA	Benton Clean Air Authority
BCC	Benton County Code
BCEM	Benton County Emergency Management
BCES	Benton County Emergency Services
Benton PUD	Benton Public Utility District
bgs	below ground surface
BMPs	best management practices
BPA	Bonneville Power Administration
REA	Benton Rural Electric Association
Btu	British thermal units
CEM	continuous emission monitoring
CEMS	continuous emission monitoring system
cfs	cubic feet per second
CO	carbon monoxide
CSZ	Cascadia Subduction Zone
CT	combustion turbine
CTG	electrical generator
dB	decibel
dBA	A-weighted decibels
dBC	C-weighted decibels
DC	direct current
DCS	distributed control system
DOT	U.S. Department of Transportation
DPS	Distinct Population Segment

ECW	water conductivity
Ecology	Washington State Department of Ecology
EDNA	Environmental Designation for Noise Abatement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ESU	Evolutionary Significant Unit
FCRTS	Federal Columbia Regional Transportation System
FERC	Federal Energy Regulatory Commission
FLM	Federal Land Manager
GMAAD	Growth Management Act Agricultural District
gpm	gallons per minute
HDPE	high-density polyethylene
hp	horsepower
HRSG	heat recovery steam generator
HZ	hertz
KSD	Kennewick School District
kV	kilovolt
kWh	kilowatt-hour
L_{eq}	equivalent sound level
L_{90}	sound level exceeded 90 percent of the time
L_{max}	maximum sound level
LHV	lower heating value
LNG	liquid natural gas
µmohs/cm	micromhos per centimeter
mg/L	milligrams per liter
MMBtu	million Btu
mmh/cm	millimhos/per centimeter
mph	miles per hour
MW	megawatt
MWh	megawatt hours
NAAQS	National Ambient Air Quality Standards
NACS	Natural Resource Conservation Service

NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOC	Notice of Construction
NO_x	nitrous oxide
NPDES	National Pollution Discharge Elimination System
NRCS	Natural Resources Conservation Service
NWPPC	Northwest Power Planning Council
ONHP	Oregon Natural Heritage Programs
OSHA	Occupational Safety and Health Administration
PAH	polyaromatic hydrocarbons
PGF	Plymouth Generating Facility
PM	particulate matter
ppm	parts per million
PSD	Prevention of Significant Deterioration
psia	pounds per square inch absolute
psig	pounds per square inch gauge
PUD	Public Utility District
PWD	Plymouth Water District
RPM	revolutions per minute
RV	recreational vehicle
SCR	Selective Catalytic Reduction
SE-COMM	Southeast Communications Center
SEPA	State Environmental Policy Act
SILs	Significant Impact Levels
SLM	sound level measurement
SMA	Shoreline Management Act
SO_2	sulfur dioxide
SPER	Spill Prevention and Emergency Response
ST	steam turbine
SWDM	Surface Water Design Manual
SWPPP	Stormwater Pollution Prevention Plan

tcf	trillion cubic feet
TDS	total dissolved solids
U.S. EPA	U.S. Environmental Protection Agency
UGA	Urban Growth Area
UPS	uninterruptible power supplies
USD	Umatilla School District
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VOCs	volatile organic compounds
WAAQS	Washington Ambient Air Quality Standards
WDFW	Washington Department of Fish and Wildlife
WDNR	Washington Department of Natural Resources
WRIA	Water Resource Inventory Area
WSCC	Western Systems Coordinating Council
WSDOT	Washington State Department of Transportation
WSP	Washington State Patrol

I. SUMMARY AND PROJECT DESCRIPTION

I.A INTRODUCTION

Plymouth Energy, L.L.C. (Plymouth Energy) proposes to construct and operate the Plymouth Generating Facility (PGF), which would be a 307-megawatt (MW) natural gas-fired, combined cycle power generation facility on a 44.5-acre site 2 miles west of the rural community of Plymouth in southern Benton County, Washington. Plymouth Energy has proposed that the PGF would be interconnected to the Bonneville Power Administration's (BPA's) proposed McNary-John Day 500-kilovolt (kV) transmission line at a point approximately 4.7 miles west of BPA's McNary Substation. This tie-in to the McNary-John Day line would be approximately 0.6 mile to the north of the project site.[1]

Natural gas would be supplied to the project by an 800-foot pipeline lateral from the Williams Northwest Gas Pipeline Company (Williams Co.) Plymouth Compressor Station, which is located adjacent to the plant site. Water for project use would be supplied from a groundwater well whose perfected rights have been transferred to the project. A small additional quantity of water to meet plant peak needs would be obtained by lease from the neighboring farm operation. Wastewater resulting from project operations would be supplied to the neighboring farm for blending with farm-supplied water, and then used for crop irrigation. Electricity generated by the PGF would be delivered to the BPA electric grid via a new transmission interconnection for transmission of energy to regional purchasers of electricity.

I.B PURPOSE AND NEED FOR THE PROPOSED ACTION

I.B.1 NEED FOR ACTION

The West Coast is still recovering from energy market conditions in 2000 through 2002, during which there was a shortfall in electric energy supply and a volatile wholesale long-term power market in which prices reached record highs. Recent national and regional forecasts project increasing consumption of electrical energy to continue into the foreseeable future, requiring development of new generation resources to satisfy the increasing demand. Although frequently changing market conditions and forces inherently result in a certain amount of uncertainty in energy load and resource projection, longer-term projections fairly consistently forecast load growth and a need for resource development to serve this growth. For example, BPA's energy projections in the latest *Pacific Northwest Loads and Resources Study* ("White Book") forecast that the region faces a firm energy deficit of approximately 7,125 average megawatts (aMW) by 2011 if no new resources are developed (BPA 2002).

[1] This interconnection will be referred to in the EIS as the proposed transmission interconnection and evaluated as part of the proposed project. Alternatives to this method of interconnection are also discussed in the DEIS and FEIS.

In addition, the Western Electricity Coordinating Council[2] (WECC) predicts a 2.5 percent per year increase in peak demand for the Northwest Power Pool (the states of Washington, Oregon, Idaho and Utah; the Canadian provinces of British Columbia and Alberta; and portions of Montana, Wyoming, Nevada, and California) between 2001 and 2011 (WECC 2002). The WECC also notes that hydro generation capability in the region has been reduced in recent years by factors such as the hydro spill policies of the 2000 Biological Opinion that are designed to help migration of anadromous fish. According to the WECC, it is critical that an average of about 4,000 MW of planned generation additions enter service each year to maintain minimum reserve requirements for generation resources (WECC 2002).

Numerous generation interconnection study requests from proponents of non-hydro generation, including the PGF, were received by BPA in 2001 and 2002, when power prices reached all-time highs. Although these requests represent a substantial amount of generation capacity, many of these requests are currently inactive as proposed. Many new generation plants have been cancelled or put on hold due to current market conditions and the slowing economy. However, long-term projections for the region are for continued growth and increasing demand, and the adequacy of generation supply in the Northwest over the next 10 years directly depends on how many of these or other proposed facilities are built (WECC 2002).

For BPA, there is a need to respond to Plymouth Energy's request for interconnection and transmission services for the PGF. Generation resources typically require interconnection with a high-voltage electrical transmission system for delivery to purchasing retail utilities. The BPA owns and operates the Federal Columbia Regional Transmission System (FCRTS), comprising more than three-fourths of the high-voltage transmission grid in the Pacific Northwest and including extra-regional transmission facilities. BPA operates the FCRTS, in part, to integrate and transmit electric power from federal and non-federal generating units. Interconnection with the FCRTS is essential to deliver power from many generation facilities to loads both within and outside the Pacific Northwest.

In summary, electrical consumers in the Pacific Northwest and Western states need increased power production to serve increasing demand, and high-voltage transmission services to deliver that power. The purpose of the PGF project is to help meet this future need for energy resources. In addition, BPA needs to respond to the request for interconnection and transmission services for the PGF project.

[2] In 2002, the Western Systems Coordinating Council merged with the Western Regional Transmission Association and the Southwest Regional Transmission Association to form the Western Electricity Coordinating Council (WECC). WECC provides coordination essential in operating and planning a reliable and adequate electric power system for the western part of the continental United States, Canada, and Mexico. The WECC service area encompasses approximately 1.8 million square miles, more than one-half of the contiguous area of the United States. WECC is the largest, geographically, of the ten regional councils of the North American Electric Reliability Council.

I.B.2 PURPOSE OF THE PROPOSED ACTION

Because Plymouth Energy has requested to integrate power from its proposed PGF into the FCRTS, BPA must decide whether and how to grant that request. BPA intends to base its decision on the following objectives or purposes:

- The provision of an adequate, economical, efficient and reliable power supply to the Pacific Northwest, and the electrical stability and reliability of FCRTS
- Consistency with BPA environmental and social responsibilities
- Cost and administrative efficiency

I.C DECISIONS TO BE MADE

To proceed with development of the PGF, Plymouth Energy must obtain the following:

- State and local permits and approvals to construct and operate the PGF
- Permission from the BPA to interconnect with BPA's regional electrical transmission grid and to transport energy through the grid

Environmental review of the proposed project is necessary at both state and federal levels and is accomplished by preparation of an Environmental Impact Statement (EIS). This EIS has been prepared in compliance with both state and federal environmental review requirements, as described in Sections 1.3.1 and 1.3.2 below.

I.C.1 WASHINGTON STATE ENVIRONMENTAL POLICY ACT REVIEW

Construction and operation of the PGF must be approved under Washington state and local authority (Benton County) and requires environmental review under Washington's State Environmental Policy Act (SEPA). This review is required for issuance of a Conditional Use Permit by Benton County, a Notice of Construction (air permit) from the Benton Clean Air Authority, and other state and local approvals.

I.C.2 NATIONAL ENVIRONMENTAL POLICY ACT REVIEW

Interconnection of the PGF to the BPA transmission grid requires approval by the BPA. As a discretionary decision, BPA must be informed about the environmental consequences of interconnection. Environmental review under the National Environmental Policy Act (NEPA) is also required for the BPA to enter into an agreement for transmission of the power plant's electrical output via BPA's transmission grid to energy end users.

I.D SCOPE AND ORGANIZATION OF THE EIS

This EIS evaluates the environmental effects of the proposed project and determines if any environmental impacts would result. The environmental evaluation includes the proposed power generation facility (including the power plant, gas pipeline, and water supply/wastewater pipeline), transmission interconnection, and access road. Alternatives

to the proposed action that are evaluated include two transmission interconnection alternatives, an access alternative, and the No Action Alternative (project not constructed or operated).

The Final EIS is divided into the following chapters:

- **Chapter I, Updated Summary and Project Description.** This chapter summarizes the EIS and includes a discussion of the Purpose and Need for the Proposed Action (NEPA requirement), a brief description of the Proposed Action and Alternatives, and a summary of the primary impacts and mitigation measures. It also includes a summary of the opportunities for public participation and consultation throughout the EIS preparation process.

- **Chapter II, Revisions to Draft EIS.** Rather than reprinting the entire Draft EIS, this Final EIS incorporates the Draft EIS by reference, and, in this chapter, identifies any changes and additions to the Draft EIS. Chapter II also includes errata to the DEIS, and other revisions to the Draft EIS made in response to comments on the Draft EIS.

- **Chapter III, Responses to Comments on the Draft EIS.** This chapter includes comment letters written in response to the Draft EIS, and responses to those comments.

I.E DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

I.E.1 PROPOSED ACTION (BPA'S PREFERRED ALTERNATIVE)

(a) Regional Setting

The PGF would be constructed on a site near the rural community of Plymouth, which is located on the Columbia River in the southern portion of Benton County, Washington. The plant site is 2 miles west of Plymouth and approximately 22 miles south of Kennewick, which is part of the Tri-Cities (Richland, Kennewick, and Pasco) urban area of Washington. The city of Umatilla, Oregon, also on the Columbia River, is nearby. The project is in an agricultural/industrial area with neighbors that include the Williams Co. compressor station and the AgriNorthwest grain facility. The site is flat and had been in agricultural production but is now fallow.

(b) Plymouth Generating Facility and Related Facilities

The location of the PGF and related facilities is shown on (revised) Figure 2-3 following Chapter II of this Final EIS. The PGF and related facilities are described briefly in the following subsections. Chapter 2 in the Draft EIS describes the proposed project in more detail.

Generating Facility

The generating facility would include equipment that can produce 307 nominal[3] MW of electricity. The facility would include a natural gas-fired combustion turbine generator and a steam turbine generator. Other major equipment would include a heat recovery steam generator (HRSG), condensing/cooling system, water treatment system, water storage tanks and a switchyard that would include transformers and switching equipment.

Transmission Interconnection

The PGF would produce 307 MW of electrical energy at 500-kV. Plymouth Energy has requested interconnection of the PGF to BPA's proposed 500-kV McNary-John Day high-voltage electrical transmission line to be located within the existing BPA transmission line right-of-way corridor that runs from east to west approximately 0.6 mile north of the plant site. The BPA right-of-way corridor currently includes two lines, one operating at 230 kV (known as the McNary-Horse Heaven 230-kV transmission line) and the second at 345 kV (known as the Ross-McNary 345-kV transmission line). The 500-kV McNary-John Day transmission line would therefore be the third line in this corridor. BPA completed its NEPA process for this proposed line in November 2002, and is currently completing permitting activities for this line. As of May 2003, the construction start date for the McNary-John Day line had not yet been established. The proposed PGF interconnection would consist of a 0.6-mile 500-kV transmission line that would extend from the PGF north to an interconnection point on the 500-kV McNary-John Day transmission line. Four to six transmission towers would be installed to support the 0.6-mile line; these towers would be approximately 100 to 140 feet in height.

Gas Supply

The PGF would be located adjacent to the Williams Co. compressor station, which is a point of intersection for several regional gas transmission pipelines. The PGF would be connected to the compressor station by an 800-foot pipeline that would supply natural gas fuel to the PGF.

Water Supply and Wastewater

The PGF would require water for plant operations and cooling. The steam condensing and cooling system would be the predominant water user. To minimize water use, two parallel steam condensing systems would be used. The facility would rely on an air-cooled condenser (ACC), which has no water requirement, during periods when the outside air temperature is approximately 25 degrees Fahrenheit (F) or colder. During the warmest periods of the year, the facility would rely on a steam condenser/mechanical draft wet cooling tower (wet tower), which does require makeup water to replace evaporative losses and replace wastewater (blowdown) generated by the wet tower

[3] The 307 MW size is approximate. Actual megawatt production would vary depending on weather conditions and other factors.

system. During much of the year, both systems would be in operation and balanced to minimize water use while maximizing cooling efficiency.

Maximum annual water use is projected to be 1,100 acre-feet per year (af/yr). Of this requirement, 960 af/yr would be supplied from a groundwater well whose rights have been purchased and transferred to Plymouth Energy. The remaining approximately 140 af/yr would be leased from the adjacent property owner and be supplied from existing wells. All wells that would supply water have existing water rights that have been recently reviewed and certified by the Benton County Water Conservancy Board and the Washington State Department of Ecology.

A maximum of 200 af/yr of wastewater would be generated by the PGF. This water would be supplied to the Plymouth Farm, the adjoining agricultural property, where it would be blended with existing water supplies and applied to agricultural crops as irrigation water. During the time of year when crop irrigation is not required, wastewater would be stored in a pond.

Site Access for Construction and Operation

Access to the plant site would be from State Route (SR) 14. The site access road would utilize a portion of the existing Plymouth Industrial Road that enters AgriNorthwest's grain facility (east of the plant site). A new road would be constructed from the plant site to intersect Plymouth Industrial Road. This access road would be used for both the construction and operation periods of the PGF. Heavy equipment components of the PGF would be delivered by rail to a rail siding located near the plant site and adjacent to Plymouth Industrial Road. A temporary offload platform would be constructed and heavy lift vehicles would be employed to move the heavy equipment components via Plymouth Industrial Road and the site access road to the plant site.

I.E.2 NO ACTION ALTERNATIVE

The No Action Alternative would result in the PGF not being constructed or operated. The No Action Alternative would avoid site-specific impacts such as conversion of agricultural land to industrial use, impacts to transportation, impacts to visual resources, and impacts to ecological resources. Under the No Action Alternative, no air emissions would occur at this site. Also, direct and indirect employment and tax benefits would be forgone under the No Action Alternative.

The No Action Alternative would not reduce groundwater use because groundwater would continue to be used to support agricultural production. Under the No Action Alternative, no power would be produced; therefore, no contribution to regional power needs would be made.

I.E.3 ALTERNATIVES CONSIDERED

The following alternatives to the proposed project were considered and have been evaluated in this EIS. The location of these alternatives is shown on (revised) Figure 2-3 following Chapter II of this Final EIS.

- **Alternate 230/345-kV Transmission Interconnection.** As an alternative to interconnection with BPA's proposed 500-kV transmission line, the PGF could interconnect with BPA's McNary-Horse Heaven 230-kV line or Ross-McNary 345-kV line, which are also located in the BPA right-of-way corridor approximately 0.6 mile north of the plant site. Interconnection to either line would be in accordance with the availability of transmission capacity as determined by the BPA.

- **Alternate Benton PUD/BPA Transmission Interconnection.** As an alternative to interconnection to BPA's 230/345-kV or 500-kV transmission lines, the PGF could interconnect indirectly to the BPA's McNary Substation via a tie-in to the existing McNary-Franklin 230-kV transmission line. This substation is located approximately 4.7 miles to the east of the plant site on the south side of the Columbia River, adjacent to the McNary Dam. To interconnect with the BPA system at this location, Plymouth Energy would rebuild an existing Benton Public Utility District (PUD) 115-kV transmission line, adding a 230-kV circuit to the line. East of I-82 and north of the Columbia River, the new 230-kV circuit would tie into the existing BPA McNary-Franklin 230-kV line that crosses the river on existing transmission towers and terminates at the McNary Substation. This would involve building a 2.0-acre switching station at the tie-in point. Under this alternative, the McNary-Franklin line could require reconductoring, and the river crossing structures could require reinforcement or upgrades for the larger conductor.

- **Access Alternative.** As an alternative to the proposed access road, construction traffic would be routed on SR 14 to the intersection with Christy Road, west of the plant site. Construction traffic would use Christy Road in a southbound and eastbound direction and then use a newly constructed road across adjacent property and the Plymouth Farm to the proposed plant site. The alternate construction access road would not cross the Burlington Northern Santa Fe (BNSF) railroad tracks. Following completion of plant construction, the construction access road across Plymouth Farm would be removed. An existing road on Plymouth Farm currently used for farm and Williams Co. access would be improved and used for permanent access during PGF operation.

Other alternatives were considered by the applicant but were rejected, including:

- **An Alternate Plant Location.** No other sites were identified by Plymouth Energy that were in such close proximity to gas supply and transmission infrastructure facilities and that had available water supply. Minimizing infrastructure interconnection length is desired by energy facility developers because it reduces the land area impacted, project costs, and permitting requirements.

- **Larger or Smaller Generation Facility Size.** The project size was selected to optimize project energy output and economic feasibility. A smaller power plant would be unlikely to offset project development costs. A larger project would require additional infrastructure capacity, especially available cooling water and transmission capacity.

- **Use of an Alternate Generation Configuration or Technology.** Other generation technologies considered were coal (increased infrastructure for coal handling and emissions controls), wind (site is less suitable than other locations for wind turbines), and solar (increased capital investment per kilowatt [kW] of generation capacity and lower average capacity factor affects cost-effectiveness in merchant energy market). Co-generation was reviewed, but no industrial processes that require thermal energy and have operating requirements compatible with the generation facility are located nearby. The PGF, as configured, would be able to provide thermal energy to facilities that may choose to locate in the vicinity in the future. Simple cycle technology (natural gas fired combustion turbine-generator without a steam cycle) was evaluated and rejected because such configurations are less efficient.

- **Use of an Alternate Cooling System Technology.** The proposed PGF cooling system is a combined system that uses both mechanical wet tower and air- cooled condenser technology. Alternative technologies for power plant cooling include once-through cooling using cooling water from the Columbia River; dry cooling (air-cooled condenser) that uses no water; or mechanical draft wet cooling towers. Once through cooling was rejected because of the restrictions on the use of surface water for power plant cooling found in the revised National Pollutant Elimination Discharge System regulations and the difficulty of obtaining water rights for new surface water withdrawals. Dry cooling was rejected due to the expense of the system and the high impact on power production. Mechanical draft wet cooling was rejected due to the larger water requirement.

- **Use of an Alternate Water Supply.** Alternative water supplies evaluated included surface water (Columbia River), groundwater, local water district supplies, and local wastewater treatment plant effluent (gray water). The water right, purchased from Plymouth Farm by Plymouth Energy, includes a point of withdrawal from the Columbia River that could provide surface water for plant operations. However, the intake structure and supply pipeline for this point of withdrawal is owned and operated by an independent third party. To ensure plant operating reliability, reliance on independent third parties was avoided and the surface water point of withdrawal for this water right was relinquished in favor of a groundwater point of withdrawal within the proposed plant site. Obtaining approval for a separate point of surface water withdrawal, owned and operated by Plymouth Energy for sole use of the power plant, was not considered feasible. The plant site is not located within a local water service district,

and extension of service from the Plymouth Water District was not considered feasible. No wastewater treatment plant effluent is available in the nearby project vicinity.

- **Alternate Wastewater Disposal Methods.** Wastewater disposal alternatives examined include disposal to a local publicly owned treatment works (POTW), groundwater injection, discharge to a surface water body, installation of a zero discharge system, and agricultural irrigation. A POTW is not located in the area, so this alternative was rejected. Discharge to a surface water body or an injection well would require extensive permitting, and in the case of injection wells, is not encouraged by state policy. A zero discharge system (recirculation and treatment of wastewater) increases plant operating requirements and produces a solid waste for disposal. This system was rejected in favor of discharge of wastewater for agricultural use, which allows for increased plant operating efficiency and reuse of wastewater for irrigation.

I.F SUMMARY OF PUBLIC INVOLVEMENT, CONSULTATION, AND COORDINATION

Both SEPA and NEPA require opportunities for public input and consultation during the preparation of an EIS. Consistent with these requirements, Benton County and the BPA have held three public meetings and requested public input on the scope of the EIS and public comment on the Draft EIS.

The following summarizes the activities that have been conducted:

- **Initial Public Notice.** On December 21, 2001, Benton County received an Application for Conditional Use Permit and SEPA Checklist from Plymouth Energy for the PGF project. Benton County reviewed the application and issued a Notice of Application, Determination of Significance, and request for comments on the scope of an EIS on January 12, 2002. This public notice initiated a 30-day comment period during which the public and representatives of public agencies were asked to comment on the project and suggest issues that should be evaluated in the EIS. This initial public notice also announced a public meeting to be held in the community of Plymouth near the proposed plant site to discuss the project and obtain additional public input with regard to the scope of the EIS.

- **First Public Meeting.** On January 24, 2002, Benton County hosted an evening scoping meeting at the Plymouth Fire Station. The meeting included presentations by (1) Benton County, explaining the process that will be followed for preparation of the EIS, (2) BPA on its role, and (3) Plymouth Energy on the project itself. Members of the public asked questions and were given the opportunity to provide written comments.

- **Mailing List.** Benton County and BPA have developed and are maintaining a mailing list of interested parties. All public notices and announcements concerning the project are mailed to all parties on the mailing list.

- **Completion of the EIS Scoping Report.** Following closure of the initial public comment period (February 12, 2002), Benton County and BPA jointly reviewed all of the comments received from members of the public and relevant public agencies and developed the scope of issues to be evaluated in the EIS. An EIS Scoping Report was prepared by the County in consultation with BPA.

- **Second Public Meeting.** On April 9, 2002, the BPA hosted a evening open house meeting at the Paterson School in Paterson, Washington, a community approximately 10 miles to the west of the proposed project site. At this meeting, the BPA and representatives of Plymouth Energy discussed the PGF in an open house format. Displays with project information were available, and BPA and PGF representatives answered questions posed by attending members of the public.

- **Draft EIS.** The Draft EIS was published in August 2002, and was available for public comment through October 15, 2002.

- **Third Public Meeting.** On September 26, 2002, Benton County and BPA hosted an evening open house meeting at the Plymouth Fire Station, in order to answer questions on the Draft EIS and collect public comments on the Draft EIS.

Comments on the Draft EIS submitted during the comment period were considered in preparation of the Final EIS. The FEIS lists a response for each comment (see Chapter III of this FEIS), and amends the Draft EIS text where necessary (see Chapter II of this FEIS).

I.G SUMMARY OF POTENTIAL PROJECT IMPACTS AND MITIGATION MEASURES

A summary of the potential impacts, design measures, and mitigation measures to be implemented by the project is presented in Table 1-1 in the Draft EIS. The table is organized by the various elements of the environment. For each element, the existing conditions, impacts, and impacts of the alternatives are summarized. Specific design measures that would reduce or eliminate impacts to which Plymouth Energy has committed are also listed. With the exception of a potentially significant noise impact, no significant impacts were identified. Mitigation has been identified to reduce or eliminate this potentially significant noise impact.

I.H CUMULATIVE IMPACTS

Construction and operation of the PGF is expected to have limited environmental impacts, primarily on the plant site and the immediate area. Only one of these impacts, noise, could potentially be significant. In addition to the direct impacts caused by the PGF, cumulative impacts that could arise from the effect of a number of projects being constructed and operated in the regional area of the proposed project have been evaluated. For land use, transportation, and other site-related cumulative impacts, this evaluation includes projects within 30 miles of the PGF plant site. The cumulative regional haze evaluation includes projects as far away as 230 miles from the plant site. In addition, the potential of the PGF to contribute to global warming from greenhouse gas emissions is discussed.

I.H.1 REGIONAL TRENDS

The PGF plant site is located in a predominantly agricultural area of Benton County. Because it is adjacent to river, rail, and highway transportation and has both electrical and gas pipeline infrastructure located nearby, a trend toward industrial development has occurred and is expected to continue. In addition, the proximity of natural gas pipelines and high voltage transmission lines along both sides of the Columbia River from McNary Dam down to The Dalles has supported the development of natural gas-fired power plants in the region. The lack of urbanization, except in small communities, reduces the potential for conflict between urban and industrial development.

The trend toward additional industrial development is not likely to change the general land use pattern in the region, which is dominated by agriculture and undeveloped land.

Further development of industrial activity in the region, especially industries such as power generation that produce air emissions, may potentially impact air quality. Future industrial development may also be limited by the availability and ability to transfer water rights to industrial uses.

Local and Regional Cumulative Impacts

The cumulative analysis of impacts was performed by identifying projects whose impacts could overlap and thus add cumulatively to the impacts of the PGF. Seventeen projects in the Plymouth/Umatilla/Hermiston area were identified for cumulative impact analysis, including power plants, transmission lines, wind farms, an industrial facility, and a recreation facility. Several of these evaluated projects were found to have potential air quality, transportation, energy and natural resource, and socioeconomic cumulative impacts. No potential cumulative impacts were expected to occur to earth, water, biological resources, environmental health, noise, land use, visual resources, or cultural resources.

Results of cumulative impact evaluations are listed below:

- **Air Quality.** The region in which the proposed project is located includes eight other potential significant air emission sources, all of which are power plants. Four of these power plants are currently operating, and the remaining are approved for construction or seeking licensing. Both cumulative air quality and regional haze evaluations found that the PGF would not significantly contribute to air quality impacts. In particular, the regional haze evaluation examined impacts on Class 1 air quality areas and the Columbia Gorge National Recreation Area and included power plants well beyond the immediate project vicinity. See Sections 3.2 and 3.14 in the Draft EIS for additional discussion on air quality cumulative impacts. Also, see Chapter II of this FEIS for revisions to Section 3.2 of the Draft EIS, Air Quality, and Appendix B2, Contributions to Regional Haze.

- **Transportation.** The region in which the proposed project is located is not becoming urbanized and, therefore, increased traffic congestion on the regional highway system is not expected. Because power plants generate a very small volume of traffic during their operational phase, the cumulative impact analysis focused on the construction phase, which would be associated with relatively higher traffic volumes. Projects that could be constructed during the same time period as the PGF were identified, and the combined traffic impacts were evaluated. Several other projects in the region could be constructed at the same time as the PGF; therefore, significant cumulative impacts could occur. However, the PGF would be a very small portion of the total cumulative impact resulting from this group of projects. See Sections 3.11 and 3.14 in the Draft EIS for more detailed discussion on transportation cumulative impacts.

- **Energy and Natural Resources.** All projects in the vicinity of the PGF will burn natural gas as a primary fuel during the period the PGF is expected to operate. An evaluation of the total demand for fuel for all projects operating simultaneously found that the PGF would not significantly impact the region or the nation's supply of natural gas resources. See Sections 3.5 and 3.14 in the Draft EIS for more detailed discussions of energy and natural resources cumulative impacts.

- **Socioeconomics.** Because power plants have relatively small operating employment and produce tax revenues during operation, socioeconomic impacts would primarily be related to the project's construction phase. Projects that would be constructed during the same or a similar time period as the PGF were evaluated for potential socioeconomic impacts. The review found that impacts to labor force and requirements for local services could be cumulatively significant but would be due primarily to projects other than the PGF that are planned or under construction in the

region. See Sections 3.13 and 3.14 in the Draft EIS for more detailed discussions on cumulative socioeconomic impacts.

- **Public Services and Utilities** – Impacts from the PGF would be not significant; however, a potentially significant cumulative impact on public services and utilities could occur because additional daily or weekly population in the region (construction workers on other projects) would place a higher demand on services such as law enforcement, fire protection, and emergency services. See Sections 3.12 and 3.14 in the Draft EIS for more discussion on cumulative impacts to public services and utilities.

Greenhouse Gas and Global Warming

In addition to the local and regional cumulative impacts discussed above, fossil-fuel power plants, including natural gas-fired combustion turbine projects such as the PGF, emit air pollutants that are of concern for their potential contribution to global warming. Power plant emissions of carbon dioxide (CO_2) are thought to increase the ability of the earth's atmosphere to trap heat and increase global temperatures. This phenomenon is considered to be of global concern and is not necessarily a local or regional cumulative impact. At its maximum emissions potential, the PGF would generate annual CO_2 emissions that are approximately 0.015 percent of the total of all CO_2 emissions in the U.S. Actual plant CO_2 emissions would be less. The effect of this small contribution to global warming is not known.

References

BPA 2002. Email communication between Phil Smith, Bonneville Power Administration, and Katie Carroz, URS Corporation. December 31, 2002.

Western Electricity Coordinating Council (WECC). 2002. 10-Year Coordinated Plan Summary, 2002-2011: Planning and Operation for Electric System Reliability. Salt Lake City, Utah. September.

II. REVISIONS TO DRAFT EIS

This section contains errata to the Draft EIS, in response to public comments. The comments and responses are listed in Chapter III of this FEIS.

II.A REVISIONS TO CHAPTER 2.0 OF DEIS

(a) Figure 2-3 in the Draft EIS should be replaced with the revised Figure 2-3 located at the end of Chapter II of this Final EIS.

(b) On Page 2-9, first sentence of second paragraph should be revised as follows:

Generated power would be delivered to either the proposed BPA McNary-John Day 500-kV transmission line or the existing BPA McNary-Horse Heaven~~Big Eddy~~ 230-kV or Ross-McNary 345-kV transmission lines, all~~both~~ of which are located approximately 0.6 mile north of the plant site.

(c) On Page 2-48, the first paragraph should be revised as follows:

As an alternative to interconnection with BPA's proposed 500-kV transmission line, the PGF could interconnect with the existing BPA McNary-Horse Heaven~~Big Eddy~~ 230 kV or Ross-McNary 345-kV transmission lines, which ~~is~~are both also located in the BPA right-of-way corridor approximately 0.6 mile north of the plant site. Transmission, configuration, and construction would be the same as for the proposed 500-kV transmission line, since the ~~two~~ lines are located in the same transmission corridor. ~~The line interconnecting to the PGF would cross under the 230-kV line and interconnect with the 230/345-kV line.~~ Figure 2-10 shows the 230/345-kV interconnection.

(d) On Page 2-48, the fourth paragraph should be revised as follows:

From Christy Road approximately 2.0 miles west of I-82, the existing Benton PUD line ~~runs~~turns north for approximately 0.4 mile, and then turns east again. The line continues east~~ward approximately 2 miles,~~ to where it crosses I-82. Approximately 0.25 mile east of I-82, the existing BPUD line turns northeastward towards Kennewick.

The Alternate Benton PUD/BPA transmission interconnection route would connect to and follow the existing 115-kV BPUD line to a location east of I-82. Between the connection point and the location east of I-82, the BPUD line would be rebuilt to accommodate both the BPUD 115-kV line and the PGF 230-kV interconnection line. At the point east of I-82 (approximately 0.25 mile east of I-82), the alternate interconnection route would terminate its connection with the BPUD line, and tie into the existing McNary-Franklin transmission line, which currently extends from Franklin County southward across the Columbia River to the McNary Substation. A 2.0-acre switching station would be built at the tie-in point (where the interconnection switches from the BPUD line to the Franklin-McNary line).

At the Columbia River, the Alternate Benton PUD/BPA transmission interconnection route would continue as part of the McNary-Franklin line south across the Columbia

River and would interconnect with BPA transmission at the McNary substation. ~~After crossing I-82, the existing BPUD line turns northeastward towards Kennewick. At this point, the alternate transmission interconnection would turn south, cross the Columbia River on existing towers, and interconnect with BPA transmission in the McNary substation.~~

(e) On page 2-48, the 6th paragraph should be revised as follows:

~~At the Columbia River, the 230-kV circuit that would interconnect the PGF would be tied into another existing BPA transmission line that already crosses the river and terminates at BPA's McNary Substation. It is assumed that~~ Under the Alternate Benton PUD/BPA interconnection, BPA may need to upgrade~~replace~~ the conductors and/or lines of ~~this~~the McNary-Franklin river crossing to accommodate the PGF interconnection. ~~with larger conductors for the portion of the line that crosses the river.~~ This upgrade would be performed by BPA. Section 2.4.2.2 presents further detail about construction of this alternate interconnection.

(f) On page 2-55, the first paragraph should be revised as follows:

2.4.2.2 Construction Sequence

Construction of the Alternate Benton PUD/BPA transmission interconnection would require new construction as well as re-building of existing facilities. Starting from the PGF, the alternate interconnection would require building approximately 1.0 mile of new single-circuit 230-kV transmission line on wood poles from the PGF plant site south to Christy Road. This line would extend to a location just east of the existing Benton Rural Electric Association (BREA) substation, south of Christy Road.

From the BREA substation, the Alternate Benton PUD/BPA transmission interconnection would require that the existing BPUD 115-kV line is removed and rebuilt between the BREA substation and a point approximately 0.25 mile east of I-82 (the tie-in point). The rebuilding would involve removing the single-circuit 115-kV line and installing a double circuit 115-kV/230-kV transmission line on steel or wood poles. The 115-kV would be on one side of the structure and the 230-kV would be on the other side.

At the tie-in point, the alternate interconnection route would terminate its connection with the BPUD line, tie into the existing McNary-Franklin line at a new 2.0-acre (three-breaker) switching station, and continue south on this line to connect to the McNary Substation. If necessary, the existing McNary-Franklin 230-kV line could be rebuilt from the tie-in point to the McNary Substation. The rebuilding could consist of replacing or re-rating the existing line conductor to accommodate the increased capacity. Also, the line structures could be reinforced in place, or removed and replaced as required for the increased load on the conductors. Also, modifications and upgrades would be required inside the McNary Substation for this alternative and would be completed by BPA.~~replacement of the existing towers with new towers, restringing the 115-kV circuit, and stringing the new 230-kV circuit. The transmission towers would be placed adjacent to the existing towers within existing right-of-way.~~

II.B REVISIONS TO CHAPTER 3.0 OF DEIS

II.B.1 Section 3.1 Earth

(a) On page 3.1-25, Section 3.1.1.3 has been revised as follows:

3.1.1.3 Alternate 230/345-kV Transmission Interconnection

The existing condition for the alternate 230/345-kV transmission interconnection is the same as for the proposed transmission interconnection because the 230-kV and 345-kV lines are ~~is~~ located in the same physical location as the proposed 500-kV line.

(b) On page 3.1-31, Section 3.1.2.4 has been revised as follows:

3.1.2.4 Alternate 230/345-kV Transmission Interconnection

Impacts would be the same as for the proposed transmission interconnection because the 230-kV and the 345-kV lines and the proposed 500-kV line~~s~~ have the same physical location.

(c) On page 3.1-32, the third sentence of the first full paragraph should be revised as follows:

Similarly, the proposed transmission interconnection and the alternate 230/345-kV transmission interconnection would join existing BPA lines, resulting in the construction of just four to six new towers north of the plant site.

II.B.2 Section 3.2 Air Quality

(a) The following text starting from the fourth paragraph on page 3.2-15 up to Section 3.2.2.3.2 on page 3.2-16 of the Draft EIS should be revised as follows:

Based on the recommendation of the BCAA (BCAA 2002), meteorological data for the dispersion modeling were taken from Pendleton Airport, located approximately 25 miles to the east-southeast of the plant site. A full 5-year data set from Pendleton, for the years 1987 through 1991, was used in the analysis. In addition to the analysis completed with the Pendleton dataset, a second analysis was performed using meteorological data taken from the Umatilla Army Depot (UAD) just outside of Umatilla, Oregon. UAD is located south-southwest of the plant site, on the opposite side of the Columbia River. A full 5-year data set from UAD, for the years 1996 through 2000, was used in the second analysis.

Dispersion Modeling Results

Predicted criteria pollutant concentrations from both analyses are compared to ambient air quality standards and SILs in Table 3.2-5. Table 3.2-5 indicates that concentrations predicted with the Pendleton meteorological data for all pollutants and averaging periods were lower than applicable ambient air quality standards. In addition, these

concentrations were lower than the SILs, even with the compounding conservative assumptions used in the analysis. Compared to the Pendleton analysis, the modeling analysis based on the UAD meteorological data resulted in lower 1-hour average and annual average pollutant concentrations, but higher predicted 3-hour, 8-hour, and 24-hour average pollutant concentrations. While none of these concentrations exceed ambient air quality standards, predicted 24-hour average concentrations of SO2 and PM10 using UAD data slightly exceed the applicable SILs. However, these SIL exceedances are not considered indicative of a significant air quality impact because the predicted amount of exceedance is minimal, the conservative modeling approach likely overestimates predicted concentrations, the SILs are only initial threshold screening criteria, and the predicted 24-hour average SO_2 and PM_{10} concentrations are small fractions of the ambient standards.

~~Consequently,~~ Based on this analysis, concentrations predicted using either meteorological data set ~~attributable to the PGF~~ would be insignificant with respect to ambient air quality standards; therefore, no significant adverse air quality impact would be expected.

Table 3.2-5
Maximum Criteria Pollutant Predictions

Pollutant	Averaging Time	Maximum PGF Concentration-Pendleton Met	Maximum PGF Concentration-UAD Met	Ambient Air Quality Standard	Significant Impact Level (SIL)
NO_2	Annual	0.88	0.85	100	1
SO_2	1-hour	28.26	26	1,050	NA
	3 hour	17.14	19	1,300	25
	24 hour	3.46	8.6	262	5
	Annual	0.17	0.14	52	1
CO	1 hour	116.53	113	40,000	2,000
	8 hour	13.67	62	10,000	500
PM_{10}	24 hour	2.63	5.3	150	5
	Annual	0.39	0.32	50	1

Notes:
All concentrations in micrograms per cubic meter ($\mu g/m^3$).
NA = not applicable

Maximum 24-hour and annual toxic air pollutant concentrations attributable to the PGF are compared to Ecology ASILs in Tables 3.2-6 and 3.2-7. In both the Pendleton and UAD analyses, t~~T~~he maximum predicted concentration of each pollutant is less than the applicable Ecology ASILs, implying that toxic air pollutant emissions from PGF would have an insignificant potential for adverse health effects. Thus, model results based on both sets of meteorological data indicate emissions from PGF would have a near negligible impact on local air pollutant concentrations. Consequently, no significant adverse impact from toxic air pollutant emissions is anticipated.

Table 3.2-6
Maximum 24-hour and Annual Toxic Air Pollutant Concentrations using the Pendleton Meteorological Data

Compound	Concentrations Attributable to Each Source (µg/m^3)			Combined Concentration (µg/m^3)	ASIL (µg/m^3)	Over ASIL?
	HRSG Stack	Standby Generator	Fire Pump Generator			
1,3-Butadiene	1.7E-05	0	0	0.00002	0.0036	No
Acetaldehyde	1.6E-03	5.7E-06	4.6E-06	0.002	0.45	No
Ammonia	2.2	0	0	2.2	100	No
Arsenic	1.4E-06	0	0	0.000001	0.00023	No
Benzene	4.9E-04	1.8E-04	1.4E-04	0.0008	0.12	No
Benzo(a)pyrene	8.2E-09	0	0	0.00000001	0.00048	No
Beryllium	8.2E-08	0	0	0.0000001	0.00042	No
Cadmium	7.5E-06	0	0	0.000007	0.00056	No
Chromium VI	4.8E-06	0	0	0.000005	0.000083	No
Formaldehyde	2.9E-02	1.8E-05	1.4E-05	0.03	0.077	No
Lead	3.4E-06	0	0	0.000003	0.5	No
Nickle	1.4E-05	0	0	.0000014	0.0021	No
Nitric Oxide	2.4	6.7	5.1	14	100	No
PAH	8.8E-05	1.0E-06	8.1E-07	0.00009	0.00048	No
Propylene Oxide	1.2E-03	0	0	0.001	.27	No
Sulfuric Acid	2.25E-01	0	0	0.2	3.3	No

Table 3.2-7
Maximum 24-hour and Annual Toxic Air Pollutant Concentrations using the UAD Meteorological Data

Compound	Concentrations Attributable to Each Source (µg/m^3)			Combined Concentration (µg/m^3)	ASIL (µg/m^3)	Over ASIL?
	HRSG Stack	Standby Generator	Fire Pump Generator			
1,3-Butadiene	1.4E-05	0	0	0.00001	0.0036	No
Acetaldehyde	1.3E-03	5.5E-06	3.4E-06	0.001	0.45	No
Ammonia	4.4	0	0	4.4	100	No
Arsenic	1.1E-06	0	0	0.000001	0.00023	No
Benzene	4.1E-04	1.7E-04	1.0E-04	0.0007	0.12	No
Benzo(a)pyrene	6.8E-09	0	0	0.00000001	0.00048	No
Beryllium	6.8E-08	0	0	0.0000001	0.00042	No
Cadmium	6.2E-06	0	0	0.000006	0.00056	No
Chromium VI	3.9E-06	0	0	0.000004	0.000083	No
Formaldehyde	2.4E-02	1.7E-05	1.1E-05	0.02	0.077	No
Lead	2.8E-06	0	0	0.000003	0.5	No
Nickel	1.2E-05	0	0	0.000012	0.0021	No
Nitric Oxide	4.8	5.1	4.3	14	100	No
PAH	7.3E-05	9.8E-07	6.0E-07	0.00007	0.00048	No
Propylene Oxide	9.6E-04	0	0	0.001	0.27	No
Sulfuric Acid	0.454	0	0	0.5	3.3	No

Additionally, a different dispersion model, CALPUFF, was used to evaluate total sulfur and nitrogen (which includes nitrogen present as background ammonium) deposition that would be attributable to PGF's emissions in National Parks and Wilderness Areas and in the Columbia River Gorge National Scenic Area (CRGNSA). The results are presented in Table 3.2-8. The maximum total deposition (including both wet and dry deposition) attributable to PGF in the CRGNSA was estimated to be 0.00029 kg/ha/yr for sulfur and 0.00018 kg/ha/yr for nitrogen.

The Forest Service has indicated that total deposition of less than 3 kg/ha/yr for sulfur and 5 kg/ha/yr for nitrogen are unlikely to significantly affect terrestrial ecosystems in the Pacific Northwest forests.[1] The Washington Department of Ecology has further identified a value of 0.2 percent of these total deposition values as an indicator of "significance" for a single project (analogous to the Significant Impact Levels established by EPA for criteria pollutants). The incremental impacts attributable to PGF are tiny fractions of existing deposition levels in the CRGNSA and the USFS recommended cumulative deposition criteria, and less than 7 percent of the Ecology significance levels. It is unlikely that the incremental deposition of pollutants from PGF would significantly impact the ecosystem.

The CALPUFF modeling system was also used to assess concentrations of NOx, PM10, and SO2 attributable to emissions from the facility in National Parks and Wilderness Areas and the CRGNSA (Table 3.2-9). The results indicate that PGF would not significantly contribute to concentrations of these key pollutants at any of these areas. The ambient impacts predicted to result from PGF emissions are so small that those emissions would not contribute to significant cumulative effects when combined with other sources, so a more detailed cumulative assessment of these pollutant concentrations was not warranted.

However, the CALPUFF modeling system was used to evaluate Class I area visibility effects stemming from PGF and other regional power facilities. This analysis is discussed in Appendix B.

Table 3.2-8
Annual Total Deposition Analysis Results

Area	Annual Sulfur Deposition (kg/ha/yr)				Annual Nitrogen Deposition (kg/ha/yr)			
	Back-ground	PGF	Total	Change (%)	Back-ground	PGF	Total	Change (%)
Diamond Peak Wilderness	4.000	0.00006	4.000	0.001	2.200	0.00003	2.200	0.002
Three Sisters Wilderness	5.600	0.00023	5.600	0.004	3.600	0.00015	3.600	0.004
Mt. Jefferson Wilderness	4.000	0.00023	4.000	0.006	1.800	0.00015	1.800	0.009
Strawberry Mtn. Wilderness	1.400	0.00010	1.400	0.007	1.200	0.00006	1.200	0.005

[1] Peterson, J. et al. 1992: *Guidelines for Evaluating Air Pollution Impacts on Class I Areas in the Pacific Northwest*. USDA Forest Service. General Technical Report PNW-GTR-299, May, 1992.

Mt. Hood Wilderness	8.600	0.00022	8.600	0.003	5.400	0.00013	5.400	0.002
CRGNSA	12.000	0.00029	12.000	0.002	10.000	0.00018	10.000	0.002
Eagle Cap Wilderness	1.600	0.00025	1.600	0.015	1.600	0.00016	1.600	0.010
Hells Canyon Wilderness	1.400	0.00027	1.400	0.019	1.200	0.00018	1.200	0.015
Mt. Adams Wilderness	10.800	0.00010	10.800	0.001	9.000	0.00006	9.000	0.001
Goat Rocks Wilderness	11.800	0.00008	11.800	0.001	9.000	0.00005	9.000	0.001
Mt. Rainier National Park	3.100	0.00005	3.100	0.002	2.400	0.00004	2.400	0.002
Olympic National Park	5.600	0.00003	5.600	0.000	2.000	0.00002	2.000	0.001
Alpine Lakes Wilderness	7.200	0.00010	7.200	0.001	5.200	0.00008	5.200	0.002
Glacier Peak Wilderness	8.000	0.00007	8.000	0.001	5.800	0.00005	5.800	0.001
North Cascades National Park	3.500	0.00006	3.500	0.002	5.200	0.00004	5.200	0.001
Pasayten Wilderness	7.200	0.00011	7.200	0.002	5.200	0.00009	5.200	0.002
Mt. Baker Wilderness	No Data	0.00005	N/A	N/A	No Data	0.00003	N/A	N/A
Spokane Indian Res.	No Data	0.00041	N/A	N/A	No Data	0.00026	N/A	N/A
Maximum	-	0.00041	12	0.019	-	0.00018	10	0.015
USFS Criteria	-	-	3.000	-	-	-	5.000	-
Ecology single-project significance level	-	0.006	-	-	-	0.010	-	-

Table 3.2-9
Maximum Concentration Predictions Attributable to PGF Emissions (μg/m3)

Area (a)	Annual Average			24-hour		3-hour
	NO_2 (b)	PM_{10} (c)	SO_2	PM_{10} (c)	SO_2	SO_2
Diamond Peak Wilderness	0.0000	0.0001	0.0000	0.005	0.001	0.002
Three Sisters Wilderness	0.0000	0.0003	0.0001	0.009	0.002	0.006
Mt. Jefferson Wilderness	0.0000	0.0004	0.0001	0.012	0.003	0.009
Strawberry Mtn. Wilderness	0.0000	0.0004	0.0001	0.016	0.005	0.019
Mt. Hood Wilderness	0.0001	0.0009	0.0002	0.033	0.009	0.021
CRGNSA	0.0003	0.0016	0.0005	0.080	0.021	0.048
Eagle Cap Wilderness	0.0001	0.0007	0.0002	0.013	0.004	0.019
Hells Canyon Wilderness	0.0001	0.0007	0.0002	0.009	0.003	0.016
Mt. Adams Wilderness	0.0000	0.0004	0.0001	0.011	0.002	0.010
Goat Rocks Wilderness	0.0000	0.0003	0.0001	0.010	0.002	0.006
Mt. Rainier National Park	0.0000	0.0002	0.0000	0.007	0.001	0.005
Olympic National Park	0.0000	0.0001	0.0000	0.005	0.001	0.003
Alpine Lakes Wilderness	0.0000	0.0002	0.0001	0.007	0.002	0.006
Glacier Peak Wilderness	0.0000	0.0002	0.0000	0.006	0.002	0.004
North Cascades National Park	0.0000	0.0001	0.0000	0.004	0.001	0.003
Pasayten Wilderness	0.0000	0.0002	0.0000	0.004	0.001	0.003

Mt. Baker Wilderness	0.0000	0.0001	0.0000	0.003	0.001	0.002
Spokane Indian Res.	0.0002	0.0010	0.0003	0.013	0.005	0.019
Maximum	0.0003	0.0016	0.0005	0.08	0.021	0.048
EPA Proposed Class I SIL	0.1000	0.2000	0.1000	0.300	0.200	1.000
Percent of Class I SIL	0.3	1	1	27	11	5

(a) CRGNSA and Mt. Baker Wilderness areas are not Class I areas.
(b) All NO_x is assumed to be converted to NO_2
(c) PM_{10} includes sulfates and nitrates.

(b) On page 3.2-17, Section 3.2.2.4 has been revised as follows:

3.2.2.4 Alternate 230/345-kV Transmission Interconnection

Impacts attributable to the alternate 230/345-kV transmission interconnection would be the same as the proposed transmission interconnection because the proposed 500-kV and the existing 230-kV and 345-kV lines are located in the same physical location.

(c) The last paragraph on page 3.2-19 has been revised as follows:

The April 2002 study indicated that emissions from the PGF would never cause changes in the extinction coefficient that exceed five percent in any of the nearby national parks and wilderness areas or the Columbia River Gorge National Scenic Area, indicating that the facility alone would not perceptibly affect visibility in any of the areas evaluated. However, the study determined that if all 15 power projects were built and operated at maximum capacity 365 days per year, they would have the potential to perceptibly affect visibility at Mount Hood 6 days per year and in the Columbia River Gorge National Scenic Area 7 days per year. In addition to potential power plants, there are several other potential future sources in the region that could generate air emission and contribute to visibility degradation at the CRGNSA and Mount Hood if developed. For a list of these potential non-power plant sources of air emissions, please see Table 3.14-1. These sources may add to the projected cumulative impact of the potential power plants in the region. Changes in extinction greater than 10 percent (implying a significant incremental impact) would occur 1 day per year at Mount Hood and in the Columbia River Gorge National Scenic Area. For additional detail on the cumulative air quality analysis, please refer to Appendix B.

II.B.3 Section 3.3 Water

(a) On page 3.3-15, Section 3.3.1.3 should be revised as follows:

3.3.1.3 Alternate 230/345-kV Transmission Interconnection

Existing conditions for the alternate 230/345-kilovolt (kV) transmission interconnection would be the same as for the proposed transmission interconnection, because the 230-kV and 345-kV lines ~~is~~are located in the same physical location as the proposed 500-kV line.

(b) On page 3.3-23, Section 3.3.2.3 should be revised as follows:

3.3.2.3 Alternate 230/345-kV Transmission Interconnection

Impacts attributable to the alternate 230/345-kV transmission interconnection would be the same as those attributable to the proposed transmission interconnection, because the proposed 500-kV transmission line is located in the same physical location as the existing 230-kV and 345-kV transmission lines.

II.B.4 Section 3.4 Biological Resources

(a) The first sentence in the second paragraph on Page 3.4-1 should be revised as follows:

Field investigations of the project location were conducted in February and April 2002 and February 2003.

(b) The third full paragraph on page 3.4-2 should be revised as follows:

Shrub-steppe habitat in the site area is present in scattered patches. Concentrations of shrub-steppe habitat can be found south of SR 14 and between Plymouth Road and Interstate 82 (I-82), ~~and~~ south of Christy Road, and east of I-82. Shrub-steppe habitat is also found in Fourmile Canyon, a drainage channel that runs north to south through the site area. In the Oregon portion of the site area, a shrub-steppe community can be found south of the Columbia River and north of 3rd Street.

(c) On page 3.4-19, Section 3.4.1.3 should be revised as follows:

3.4.1.3 Alternate 230/345-kV Transmission Interconnection

The existing conditions for the alternate 230/345-kilovolt (kV) transmission interconnection would be the same as the existing conditions for the proposed transmission line, because the proposed 500-kV line and the existing 230-kV and 345-kV lines are in the same physical location.

(d) The first full paragraph on page 3.4-20 should be revised as follows:

After running north for 0.4 mile, the existing line turns east and runs for approximately 2 miles to where it crosses I-82. The western end of this portion is nonnative grassland with small pockets dominated by native grasses. As is nears Plymouth Road, the transmission line is adjacent to two small isolated wetlands. On the east side of Plymouth Road, the transmission line crosses shrub-steppe habitat and lies adjacent to two more isolated wetlands. ~~The existing line then crosses I-82, where it connects to the BPA transmission line.~~ The alternate Benton PUD/BPA transmission interconnection corridor continues east, crossing I-82, ~~would follow the existing Benton PUD line until just east of I-82,~~ where it then turns south, and ties into the existing McNary-Franklin transmission line via a switching station~~would~~. This easternmost section is shrub-steppe habitat. ~~turn~~

~~south, and following the BPA transmission~~ The route would follow the McNary-Franklin line south. At the Columbia River, the alternative line would cross the cliff habitat in Washington and continue south across the Columbia River. ~~. This alignment travels south and crosses the cliff habitat in Washington.~~ On the Oregon side, it crosses riparian and wetland habitat, and nonnative grassland habitat before connecting to the McNary Substation.

(e) On page 3.4-31, Section 3.4.2.4 should be revised as follows:

3.4.2.4 Alternate 230/345-kV Transmission Interconnection

Impacts due to the alternate 230/345-kV transmission interconnection would be the same as impacts from the proposed transmission interconnection because the existing 230-kV and 345-kV lines is in the same physical location as the proposed 500-kV line.

(f) The last paragraph on page 3.4-31 should be revised as follows:

The alternate Benton PUD/BPA transmission interconnection would cross four priority habitats: shrub-steppe, wetland, riparian, and cliff. However, construction would not take place in the ~~riparian or~~ cliff areas. Construction of the alternate Benton PUD/BPA transmission interconnection would have the potential for low impacts to shrub-steppe and wetland habitats adjacent to the Columbia R~~e~~iver. Impacts to shrub habitat would occur primarily from transmission tower construction and from construction of a 2.0-acre substation east of I-82.~~No new towers would need to be constructed along this segment of the transmission interconnection.~~ An upgraded transmission circuit would be strung across the Columbia River. The river crossing structures could need to be upgraded or re-rated on the north and south sides of the Columbia River to accommodate the additional capacity. On the Oregon side, this activity would disturb a small portion of wetland and riparian habitat. Existing access roads would be used during construction~~, and no disturbance would occur on the Oregon side of the Columbia River~~.

(g) The following sentence should be added to the end of the third paragraph on page 3.4-32:

Under the Alternate Benton PUD/BPA transmission interconnection, the new switching station needed to switch the PGF interconnecting line from the Benton PUD line to the McNary-Franklin line would be constructed east of I-82 and would disturb approximately 2.0 acres of shrub-steppe habitat.

(h) The following paragraph should be added after the third paragraph on page 3.4-32:

This alternative would include following the McNary-Franklin transmission line route around the west, south and part of the east side of the McNary Substation. The possible requirement of upgrades could involve between 4 and 5 new structures near the McNary Substation. They would be monopole structures, with an estimated disturbance area of

200 square feet each. The new structures would disturb a small amount of nonnative grassland and shrub-steppe habitat.

(i) The fifth paragraph on page 3.4-32 should be revised as follows:

In conclusion, most priority habitats along the alternate Benton PUD/BPA transmission interconnection would be avoided and no significant impacts would be expected.

(j) The following paragraph should be added after the first full paragraph on page 3.4-34:

The additional tower structures and line associated with this alternative may present a slight increase in the risk for collision or electrocution. Impacts due to collision and electrocution are described in detailed in the previous section. However, there are currently a substantial number of structures and lines comprising the existing McNary Substation. Therefore, the additional tower structures and lines associated with this alternate alignment would constitute an indistinguishable increase in collision potential for listed species and other birds.

(k) The second half of the last paragraph on page 3.4-33 (continuing on to page 3.4-34) should be revised as follows:

The alternate Benton PUD/BPA transmission interconnection would upgrade~~tie into~~ the existing McNary-Franklin 230-kV line that crosses the Columbia River to the McNary Substation. No additional tower~~s~~ locations across the river would be associated with the alternate Benton PUD/BPA transmission interconnection, although some existing towers could be replaced. ~~One additional circuit would span the river but would use existing towers.~~ There are currently three sets of transmission towers supporting several conducting wires. The ~~additional~~ wire upgrade associated with the alternate Benton PUD/BPA transmission interconnection would constitute an indistinguishable increase in collision potential for bald eagles.

(l) The "Fish" subsection on page 3.4-34 should be revised as follows:

The Alternate Benton PUD/BPA transmission interconnection would cross Fourmile Canyon less than 0.5 mile from the Columbia River; however, no instream work would be required for placement of the towers or the lines. The transmission interconnection would cross the Columbia River to the east of Fourmile Canyon. The impacts from crossing the Columbia River are analyzed in the McNary-John Day Transmission Line Project DEIS (February 2002).

~~*Construction Impacts*~~

~~Construction of the alternate Benton PUD/BPA transmission interconnection would not result in any impacts to listed fish species because no impacts are anticipated to either Fourmile Canyon or the Columbia River. The alternate Benton PUD/BPA transmission~~

~~interconnection would cross Four Canyon less than 0.5 mile from the Columbia River; however, no instream work would be required for placement of the towers or the lines. The transmission interconnection would cross the Columbia River to the east of Fourmile Canyon. The existing towers would be used to connection. The lines would cross the river from Washington to Oregon by air or by boat. No disturbance to the shoreline is expected from either method or crossing. It is assumed that BPA would construct the additional line required under the alternate Benton PUD/BPA transmission interconnection.~~

~~*Operation Impacts*~~

~~Operation of the alternate Benton PUD/BPA transmission interconnection would have no impacts to listed fish species.~~

(m) On page 3.4-37, third sentence of the fourth paragraph should be revised as follows:

Similarly, the proposed and alternate 230/345-kV transmission interconnections would connect with ~~existing~~ BPA lines in a nearby existing transmission corridor, resulting in the construction of only four to six new towers north of the plant site.

(n) The shrub-steppe compensation bullet at the bottom of page 3.4-37 should be revised as follows:

Shrub-Steppe Compensation – The proposed access road would result in the removal of approximately 2 acres of degraded shrub-steppe habitat. As mitigation, Plymouth Energy would compensate for the loss by committing to contribute $2,000 (equivalent to approximately 4 acres) to the acquisition of high value shrub-steppe habitat in Benton County. Plymouth Energy would work with the WDFW, which plans to purchase this land for preservation and management. Under the alternative Benton PUD/BPA transmission interconnection, the same compensatory mitigation would be implemented for the proposed 2-acre new substation.

(o) The sediment control bullet on page 3.4-38 should be revised as follows:

Sediment Control – Implement sediment and pollution control measures as a precaution during construction of the proposed access road crossing at Fourmile Canyon. To ensure no downstream transport of disturbed materials, straw bales and silt fences would be placed downstream of the crossing location prior to construction. It is highly unlikely that any disturbed sediment would travel over a mile to the Columbia River, particularly because the channel disappears in the tilled and graded agricultural land between the BNSF railroad tracks and Christy Road. Sediment control measures for the tower replacement on the banks of the Columbia River are discussed in the McNary-John Day Transmission Line Project DEIS (February 2002).

(p) The shoreline protection bullet on page 3.4-38 should be revised as follows:

Shoreline Protection – Construct the alternate Benton PUD/BPA transmission interconnection crossing over Fourmile Canyon and the Columbia River to ensure ~~no~~limited disturbance to the channel of the canyon or the shoreline and riparian adjacent to the river. It is assumed that BPA would string the additional line that would be required from the alternate Benton PUD/BPA transmission interconnection.

(q) The second full paragraph on page 3.4-39 should be revised as follows:

A biological assessment was~~will be~~ prepared for the proposed project and submitted to USFWS and NMFS for informal~~formal~~ consultation.

II.B.5 Section 3.6 Environmental Health

(a) On page 3.6-2, Section 3.6.1.3 should be revised as follows:

3.6.1.3 Alternate 230/345-kV Transmission Interconnection

The existing condition for the 230/345-kV transmission interconnection would be the same as for the proposed transmission interconnection, because the proposed 500-kV line and the existing 230-kV and 345-kV lines are located in the same physical location.

(b) On Page 3.6-8, Section 3.6.2.4 should be revised as follows:

3.6.2.4 Alternate 230/345-kV Transmission Interconnection

Impacts attributable to the alternate 230/345-kV transmission interconnection would be the same as those for the proposed transmission interconnection because the proposed 500-kV line and the existing 230-kV and 345-kV lines are located in the same physical location.

II.B.6 Section 3.7 Noise

(a) On page 3.7-20, Section 3.7.2.4 should be revised as follows:

3.7.2.4 Alternative 230/345-kV Transmission Interconnection

Impacts of the alternate 230/345-kilovolt (kV) transmission interconnection would be the same as those for the proposed transmission interconnection because the existing 230-kV and 345-kV lines are ~~is~~ in the same physical location as the proposed 500-kV line.

II.B.7 Section 3.8 Land Use

(a) On page 3.8-14, Section 3.8.1.4 should be revised as follows:

3.8.1.4 Alternate 230/345-kV Transmission Interconnection

The existing conditions for the alternate 230/345-kV transmission interconnection would be the same as the existing conditions for the proposed transmission interconnection, because the 230-kV and 345-kV lines are ~~is~~ located in the same physical location as the proposed 500-kV line.

(b) On page 3.8-15, Section 3.8.2.2, first sentence should be revised as follows:

The plant site, alternate access roads, the proposed 500-kV and alternate 230/345-kV transmission interconnections are located on land that is zoned GMA Agricultural District (GMAAD).

(c) On page 3.8-21, Section 3.8.3.4 should be revised as follows:

3.8.3.4 Alternate 230/345-kV Transmission Interconnection

Impacts due to the alternate 230/345-kV transmission interconnection would be the same as impacts from the proposed transmission interconnection because the existing 230-kV and 345-kV lines are ~~is~~ located in the same physical location as that proposed 500-kV line.

II.B.8 Section 3.9 Visual Resources

(a) On page 3.9-12, Section 3.9.1.3 should be revised as follows:

3.9.1.3 Alternate 230/345-kV Transmission Interconnection

The existing conditions for the alternate 230/345-kilovolt (kV) transmission interconnection would be the same as the existing conditions for the proposed transmission interconnection, because the existing 230-kV 345-kV lines are ~~is~~ in the same physical location as the proposed 500-kV line.

(b) On page 3.9-27, Section 3.9.2.4 should be revised as follows:

3.9.2.4 Alternate 230/345-kV Transmission Interconnection

Impacts attributable to the alternate 230/345-kV transmission interconnection would be the same as those attributable to the proposed transmission interconnection because the existing 230-kV and 345-kV lines are ~~is~~ located in the same physical location as the proposed 500-kV line.

II.B.9 Section 3.10 Cultural Resources

(a) Text beginning at the first paragraph on page 3.10-2 should be revised as follows:

A literature review and records search was completed for the site area at the Washington State Office of Archaeology and Historic Preservation in Olympia, Washington, on December 13, 2001 and October 3, 2002. Additional records were reviewed at the Office of Historic Preservation in Salem, Oregon, on February 25, 2003, in order to obtain information on sites in the vicinity of the McNary Substation, on the south side of the Columbia River. The record searches included review of ethnographic and historic literature and maps; federal, state, and local inventories of historic properties; archaeological base maps and site records; and survey reports. The record searches conducted in Olympia, Washington revealed that no prehistoric archaeological sites have been identified within the proposed plant site or along the proposed transmission line interconnection or access road corridors. The review also indicated that ~~site area. It also indicated, however, that no~~little intensive archaeological survey has been ~~reported in the vicinity of the site area. Informal reports note the presence of prehistoric~~conducted in this area. As discussed below, however, portions of one historic railroad grade have been recorded within the Alternate Transmission Interconnection corridor. In addition, 34 prehistoric or historic archaeological sites have been documented in the general project ~~materials on the island in the Columbia River offshore of the community of Plymouth, well outside of the plant site, but these have not been confirmed.~~vicinity (see Table 3.10-1). The majority of these sites lie along or immediately adjacent to the Columbia River or on a number of islands located offshore. With a few exceptions, these sites were largely recorded between 1974 and 1983 in conjunction with surveys conducted for the U.S. Army Corps of Engineers. Four sites have been recently revisited and rerecorded by staff of the Cultural Resources Protection Program of the Confederated Tribes of the Umatilla Indian Reservation.

The record search conducted in Salem, Oregon revealed the presence of one previously recorded site in the project vicinity. This site, 35UM58, was located adjacent to the southeast side of the Umatilla Toll Bridge across the Columbia River and consisted of an open campsite recorded in 1979. Excavations were conducted at the site in 1982 in conjunction with the construction of Interstate 82 across the river (Pettigrew 1983; Minor and Greenspan 1999). Construction of the bridge resulted in the destruction of the site.

Table 3.10-1
Previously Identified Sites in the Project Vicinity

Site Trinomial (45 BN -)	Site Components	Date(s) Recorded	Distance to Project Alternative (meters)
71	Lithic scatter	Undocumented	50
181	Lithic scatter	1974	500
182	Lithic scatter/burial	1974/1998	700

184	Lithic/bone scatter	1974/1998	800
202	Lithic/groundstone/shell/ FAR scatter	1976	25
254	Paleontological (fossil bone)	1979	2,250
269	Lithic/FAR scatter (includes sites 270-273, 275, and 277-280)	1981/1998	500
274H	Historic orchard complex	1981	550
276H	Historic artifact scatter	1981	350
281	Lithic/groundstone/shell/ bone/FAR scatter	1980/1981	500
282	Lithic/ shell/FAR scatter	1981	500
283	Lithic scatter	1981	250
284	Lithic/bone/shell/ FAR scatter	1981	500
285	Lithic/bone/shell/historic artifact scatter	1981/1991	400
286	Lithic/FAR scatter	1981	450
287	Lithic/bone/shell/ FAR scatter	1981	450
288H	Lithic/shell/historic artifact scatter	1981	300
289	Lithic/shell/bone/historic artifact scatter	1981	450
290H	Prehistoric/historic artifact scatter	1981	625
291	Lithic/groundstone/shell/ Bone/FAR scatter	1981	950
292	Lithic/groundstone/shell/ Bone/FAR scatter	1981	1,200
293H	Historic homestead	1981	1,400
294	Lithic/bone/FAR scatter	1981/1982	50
295	Lithic/shell/FAR scatter	1957	180
322	Lithic/FAR scatter	1979	125
323	Lithic/bone/FAR scatter	1979	400
324	Lithic/FAR scatter	1979	700
325	Lithic/FAR scatter	1979	250
326	Lithic scatter	1979	525
327H	Prehistoric/historic artifact scatter	1971/2001	450
328	Lithic/bone/FAR scatter	1982	120
331	Rock pit	1983	1,150
332	Rock cairns	1983/1991	1,000
341	Historic Plymouth townsite	1983	100
345	Spokane, Portland and Seattle Railroad grade	1983	0

As shown in Table 4-1, a majority of the sites consist of lithic scatters, many of which contain other shell and bone fragments, fire-affected rock (FAR), ground stone, and other material or artifact classes. Several of these sites are described as quite sparse. Five sites are historic in origin, while five others contain historic as well as prehistoric materials. One site is a paleontological location and contains no cultural materials.

Of the 35 sites, one is adjacent to a proposed project facility, while three are in proximity to proposed project facilities.

Site 45BN345 consists of the remains of the original Spokane, Portland, and Seattle railroad grade, constructed in 1907-1908. The line was abandoned and relocated in the 1960s, following construction of the John Day Dam, which inundated portions of the original route. In the current project area, portions of the grade are found along the south side of Christy Road, within the proposed Alternate Transmission Interconnection corridor. Much of the grade, however, has been disturbed or destroyed by road and transmission line construction activities. The existing Benton PUD transmission line along Christy Road, in fact, closely follows the railroad alignment.

Two of the three sites in proximity to proposed project facilities (Sites 45BN71 and 45BN294) are both located south of Christy Road. These sites are between 25 and 100 meters from the route of the Alternative Benton PUD/BPA Transmission Interconnection. These sites are large, dispersed lithic scatters containing flaked stone, shell, fire-affected rock, and other materials largely exposed in small pockets in a sandy setting between Christy Road and the Columbia River. Within this portion of the Alternative PUD/BPA Transmission Interconnection corridor, the original ground surface has been graded and filled during the construction of the road and the existing transmission line; large piles of dredging spoil and other fill materials are also present. No evidence of archaeological materials was noted within this corridor.

The third site (45BN202) in proximity to the Alternate Benton PUD/BPA Transmission Interconnection corridor lies within the existing BPA transmission line right-of-way, along the shoreline of the Columbia River where the line crosses south to the Oregon side of the river. Proposed project-related activities at this location are limited to upgrading of an existing transmission line, with no additional ground disturbance.

Of the remaining 31 sites, 17 sites are more than 500 meters from any proposed project facilities, and 14 sites are from 100 to 500 meters from any proposed project facilities.

(b) Text beginning at the sixth paragraph on page 3.10-3 should be revised as follows:

~~In general, these sequences can be divided into a number of periods. While a few Paleo-Indian occupations older than 10,000 years have been identified (Beckham et al. 1988), the earliest well-documented sites date from 8,000 B.C. to 6,000 B.C. and are represented by large, lanceolate Windust-type projectile points. Other associated artifacts of this period include edge-ground cobbles, isolated fluted points and crescents, and occasional millingstones and handstones. Major artifact types suggest the presence of a nomadic hunting economy oriented toward the taking of large mammals supplemented by fish, small game, plants, and shellfish. Settlements would have been seasonal and located within resource locations. Resource locations included upland hunting and gathering sites and riverine fishing and shellfish gathering sites.~~

~~During the next period (6,000 B.C. to 4,000 B.C.), the same general economic focus was employed by the Native American inhabitants of the region. Game hunting, however, appears to have decreased in importance with a subsequent increase in the use of riverine~~

~~resources. Artifacts occurring during this period included edge-ground cobbles, oval knives, large scrapers, millingstones and handstones, and various antler and bone tools.~~

~~Between 4,000 B.C. and 1,500 B.C., the economic focus became more diversified than in previous periods. The gathering of both plant and shellfish resources dominated the subsistence activities, with hunting and fishing becoming secondary, yet still significant, sources of sustenance. Large, side-notched projectile points of the Northern, Bitteroot, and Cold Springs[2] series were the period markers. Other artifacts of this period include both millingstones and mortars with their associated counterparts (handstones and pestles respectively).~~

~~The fourth period (1,500 B.C. to AD 250) was a time of transformation for the inhabitants of the Columbia River Plateau. Cultural influences from Canadian Plateau groups were making inroads into the region. A riverine economy based on the use of anadromous fish was developing. Hunting and gathering continued but at a much decreased level. Artifacts associated with this period included contracting or tanged-stemmed Frenchman Springs or Rabbit Island projectile points, microblades, notched net sinkers, hopper mortars, pestles, antler and bone wedges, stone celts and mauls, and bone hunting and fishing implements.~~

~~By the fifth period (AD 250 to AD 1730), the riverine-based economy predominated. Large, semi-permanent villages occurred along the Columbia River floodplains and at the mouths of its major tributaries. Small, seasonal resource procurement camps were located within resource locations. A variety of small projectile points occurred at this time. In addition, the representative tool kit contained tailed end scrapers, notched net sinkers, mauls, block and slab millingstones, shell beads, and bone harpoon heads.~~

~~The period from AD 1730 to AD 1810 was marked by the presence of items of Euro-American manufacture, including glass and copper beads, guns, and various iron implements. The general pattern of reliance upon riverine resources continued; however, cultural influences from Plains groups appear. With the introduction of the horse, excursions to the Plains were made by mounted hunters in search of buffalo, and larger villages became trade centers. Artifacts of Native American origin include a variety of small projectile points, and notched and perforated net sinkers.~~

~~During the ethnohistoric period (AD 1770 - AD 1860), a general breakdown of precontact Native American lifeways occurred due to repeated interaction with Euro-Americans. While fishing remained the primary subsistence activity, hunting and gathering grew in importance, resulting in a return to a more generalized subsistence base. The artifact inventory resembled that of the previous period, but the presence of Euro-American trade goods continued to increase.~~

~~The reservation period (AD 1860 - present) represents the era in which Native American groups were coerced into adopting Euro-American lifeways (e.g., farming or ranching),~~

~~[2] Northern, Bitteroot, and Cold Springs are artifact time markers used by archaeologists to distinguish periods of prehistory.~~

~~resulting in the reduction or replacement of Native American subsistence practices. This period was marked by the nearly complete abandonment of Native American tools and subsequent adoption of Euro-American trade and consumer goods.~~

Ames and colleagues (1998) divide the prehistoric sequence into three temporal periods, each defined by specific technological or sociopolitical characteristics. These periods include: Period I (9500 - 5000/4400 B.C.), Period II (5000/4400- 1900 B.C.), and Period III (1900 B.C. – A.D. 1720).

Period I reflects initial human occupation of the Southern Plateau region, and is subdivided into two subperiods: Period IA and Period IB. Period IA (9,500 – 9,000 B.C) reflects the earliest evidence of human occupation of this region and corresponds to the Paleo-Indian period noted elsewhere in North America, exemplified by fluted projectile points. The only known intact deposit of this age in the Southern Plateau area is the Richey-Roberts Clovis Cache (Mehringer 1989). Other Paleo-Indian finds within this region are rare and have consisted entirely of surface finds (Galm et al. 1981; Hollenbeck 1987).

Period IB (9,000 – 5000/4400 B.C.) reflects the first Archaic cultures of the Southern Plateau region, defined as hunter-gatherer groups who practiced a broad-spectrum subsistence economy focused on a wide array of food resources and high seasonal and annual mobility. Given these conditions, populations were likely low and tool kits reflected maximum flexibility (Ames 1998:103). Sites reflecting Period IB components include McNary Reservoir (Shiner 1961), Indian Well (Butler 1959), Goldendale (Warren et al. 1963), Bobs Point (Minor and Toepel 1986), Wildcat Canyon (Dumond and Minor 1983), and Marmes Rockshelter (Cressman et al. 1960). Sites from this period represent facets of a broadly oriented hunting-gathering economic adaptation that included fishing, hunting of terrestrial mammals, migratory birds, and the gathering of vegetable resources.

Period II (5000/4400 - 1900 B.C.) marks important settlement and subsistence changes in some areas of the southwest Southern Plateau and occupational hiatus in others. Semi-subterranean pit houses appear for the first time, along with evidence of increased levels of camas root and salmon exploitation. A continued pattern of residential mobility rather than stable settlements has been suggested (Ames et al. 1998). Sites dating to this period are rare within the southwest Southern Plateau. There are no clearly defined habitation sites and evidence is generally scant. The best evidence of Period II occupation is found at Hobo Cave (Musil 1984). Other sites with small, Period II assemblages include Wildcat Canyon (Dumond and Minor 1983), Fivemile Rapids (Cressman et al. 1960), and the Hook site.

Period III (1900 B.C. - A.D. 1720) is characterized by the widespread reappearance of pit houses (Ames 1991; Chatters 1989), intensified fishing practices (Johnston 1987; Thomson 1987), evidence of storage (Chatters and Pokotylo 1998), intensive exploitation of camas root (Thomson 1987), and a land-use pattern similar to that encountered during ethnographic times. Land-use and settlement-subsistence practices included seasonal, winter-early spring villages in canyons and summer-fall exploitation of upland

mountains. The termination of Period III corresponds with the arrival of Europeans and the introduction of the horse in A.D. 1720.

Period III land-use patterns favor house pit villages, which were often located on terraces of very small streams that flow into a larger river (Ames 1998:111). Very large concentrations of pit houses have been found in the region, and are indicative of higher population densities. These house pit clusters are suggested to be the remains of winter residences, or "winter villages" (Nelson 1973; Swanson 1962). The best example of this is the Miller Site on Strawberry Island near the confluence of the Snake and Columbia rivers (Cleveland 1976; Schalk 1980; Schalk and Cleveland 1983).

Subsistence patterns involved intensified fishing and camas root exploitation, although faunal remains continue to reveal numerous elk, deer, sheep, sometime pronghorn and, in rare instances, bison. A certain level of continuity with the proceeding Period II is shown in assemblages with exceptions with regard to shifts in housing styles, the adoption of some artifact and burial styles, and an increase in the number and diversity of items in the exchange network

Within the southwestern Southern Plateau subregion, Period III is further organized into two subperiods: Subperiod IIIA (1000 B.C. – A.D. 1000) and Subperiod IIIB (A.D. 1000 – Contact). Archaeological research within the southwest Southern Plateau subregion has revealed local variations in some aspects of Columbia River prehistory during Subperiod IIIA. Investigations at more than 30 prehistoric houses in the John Day Reservoir area and the Dalles (Cole 1967, 1969) provides evidence for the use of round-to-square or rectangular houses, 3-8 meters across, with areas of charcoal or stone-ringed fireplaces, sometimes with superimposed floors. Populations are thought to have resided during certain season in semi-subterranean houses or in mat lodges. During other seasons, use was made of non-permanent, tent-like shelters set on the ground surface.

Subperiod IIIB is distinguished from Subperiod IIIA by some shift in housing styles and the adoption of artifact styles and burial practices from downriver groups. Habitations characteristic of Subperiod IIIB include aboveground lodges, possibly mat-covered, particularly within the John Day Reservoir area. At Wakemap Mound, in the Dalles area, mat-lodge dwellings set into the ground were preferred. Additionally, rectangular plank houses set over subterranean pits were also used and reflect similarities to the Chinook house style known downstream (Caldwell 1956). Subsistence patterns witnessed little change from the preceding period, with faunal remains continuing to reveal a focus on fishing and procurement of land animals including deer, elk, mountain sheep, and some bison and antelope.

Ethnography

The Columbia Plateau culture area (Plateau) is generally considered to lie between the Rocky Mountains to the east and the Cascade Range to the west, extending north into central British Columbia and south as far as the Klamath and Modoc areas of northern California. ~~The Plateau was characterized by Kroeber (1939) as a~~. The Plateau has been characterized as a distinct cultural ~~region of "absences and low intensity culture,"~~

~~particularly when compared to the more highly developed cultures represented on~~area since as early as the late nineteenth century, characterized by regional influences from the Northwest Coast and ~~Plains. Kroeber (1939) noted a series of sub-areas varying in terms of the degree of influence received from each of these two more complex culture areas.~~ Plains cultural areas (Walker 1998:1; Kroeber 1939). With the exception of some Athapsacan and Kutenai speakers in the far north, the Plateau is divided between two large linguistic blocks: Interior Salish and Sahaptin. The Sahaptin area roughly corresponds to the dry, unforested southern portion of the Plateau, while the Salishan relates to the more timbered regions north of the Columbia and Spokane Rivers (Ray 1936).

The site area is located within an area traditionally used by the Umatilla and Walla Walla~~and Umatilla~~ groups. Information on these groups has recently been summarized by Stern (1998). The Umatilla and Walla Walla~~and Umatilla~~ were speakers of dialects of the Sahaptin language, which in turn is part of the larger Penutian language family. Other Sahaptin divisions of the Plateau were the Yakama, Cayuse, Klickitat, Nez Perce, Palous, Tenino, Tyigh, and a number of lesser known tribes (Berreman 1937; Curtis 1911; Hodge 1907; Irwin 1975; Jacobs 1931; Ray 1936). Intermarriage was pervasive among many of these groups, giving rise to villages with composite populations that might include Walla Wallas, Yakamas, and Umatillas or Yakamas, Umatillas, and Western Columbia River Sahaptins (Stern 1998).

The seasonal subsistence and settlement system was directly related to the topography and availability of resources within the area. The Umatilla and Walla Walla~~and Umatilla~~ wintered in their semi-permanent villages along the Columbia River and its tributaries at favorable fishing sites. Families spent much of the spring, summer, and fall in seasonal camps procuring available resources. This ecological adaptation provided these groups with an abundant resource base. The patterns were elaborated, but not changed substantially, as were those of their neighbors, with the introduction of the horse (Meinig 1968).

Besides the dwellings, consisting of semi-subterranean mat lodges, various structures for sweating and storage were present within the confines of the Umatilla and Walla Walla~~and Umatilla~~ villages. Seasonal camps were made up of flat-roofed sheds that doubled as living quarters and fish drying shelters. With increasing Plains influences, tipis constructed of bulrush mats layered over cottonwood frames were utilized (Maxwell 1978).

(c) Text beginning at the last paragraph on page 3.10-7 should be revised as follows:

The plant site is located on a terrace above and approximately 0.75 mile north of the Columbia River shoreline, adjacent to and north of the existing Williams Co. compressor station. The area is now open and currently lacking in vegetation, but has been used for fruit production in the recent past. Evidence of irrigation and tree removal are present throughout the plant site, ~~and~~resulting in considerable ground disturbance. Ground visibility in much of this area was excellent. The plant site was subject to a systematic

pedestrian inventory using survey transects spaced at an average of 15- to 20-meter (49- to 66-foot) intervals. No cultural materials or features were observed within this area.

3.10.1.2.2 Transmission Interconnection

The proposed transmission interconnection would be placed within a narrow (200-foot) corridor extending approximately 0.6 mile north of the plant site. The southern portion of this corridor is much like the proposed plant site in character. It is open and largely lacking in vegetation, but has also been used for fruit production in the recent past. Evidence of irrigation and tree removal are present throughout this area, ~~and~~resulting in considerable ground disturbance. Ground visibility ~~is~~was excellent. To the north, however, the corridor enters a higher terrace used for corn and other agricultural production. Ground visibility in this area averaged approximately 50 percent. The entire transmission corridor was subject to systematic pedestrian inventory using survey transects spaced at an average of 15- to 20-meter intervals. No cultural materials or features were observed within this corridor.

3.10.1.2.3 Access Road

The proposed access road would enter the plant site from the northeast. Portions of this road follow existing paved or graded gravel access roads that pass through open agricultural lands. As the road nears the plant site, it would leave existing roadways and enter open agricultural lands currently lacking in vegetation. Previously, this area was used for fruit production. Evidence of irrigation and tree removal are present throughout this area, and ground visibility is excellent. ~~The~~With the exception of paved surfaces, the entire road corridor was subject to systematic pedestrian inventory using survey transects spaced at an average of 15- to 20~~-20~~-meter intervals. No cultural materials or features were observed within this corridor.

(d) On page 3.10-8, Section 3.10.1.3 should be revised as follows:

3.10.1.3 Alternate 230/345-kV Transmission Interconnection

The existing conditions for the alternate 230/345-kilovolt (kV) transmission interconnection would be the same as the existing conditions for the proposed transmission interconnection because the existing 230-kV and 345-kV lines are ~~is~~ located in the same physical location as the proposed 500-kV line.

(e) Text beginning at the last paragraph of page 3.10-8 should be revised as follows:

The proposed alternate Benton Public Utility District (PUD)/BPA transmission interconnection would run along the south side of Christy Road for approximately 2 miles, turn north for 0.4 mile, and continue east for approximately 2 miles, at which point it would cross I-82. The alignment then turns south at a proposed 2.0-acre switching station along the existing McNary-Franklin transmission line, and follows this existing line across the Columbia River into Oregon. On the Oregon side, the alignment connects into the McNary Substation.

The area immediately south of the plant site lies adjacent to the eastern end of the existing compressor station and is much like the plant site in character. It is open and largely lacking in vegetation but has also been used for fruit production in the recent past. Evidence of irrigation and tree removal is present throughout the plant site, and ground visibility is excellent. The terrain along Christy Road is composed largely of cut and fill associated with road construction. Little natural ground surface or vegetation is present. At the end of this section, the corridor turns north for 0.4 mile (as stated above), then turns east again and continues to Interstate 82 (I-82) and the existing Columbia River crossing of the BPA McNary/Franklin ~~John Day 500-kV~~ lines. Much of this portion of the corridor crosses relatively undisturbed, flat to gently rolling terrain marked by some areas of native vegetation. The entire alternate transmission interconnection corridor, including the existing transmission line, the proposed substation location east of I-82, and alternate corridors accessing the McNary Substation in Oregon, was subject to systematic pedestrian inventory using survey transects spaced at an average of 15- to 20-meter intervals. Site 45BN345, the remains of the Spokane, Portland, and Seattle railroad grade, parallels Christy road and the existing Benton PUD line. Consequently, approximately 2 miles of this grade is located within the proposed transmission interconnection corridor. This grade has been impacted by the construction of Christy Road, the existing transmission line, and a number of minor roads which leave Christy Road to access private parcels to the south. As a result, the grade shows poor integrity and is difficult to identify in some areas. Thus, this site does not appear to meet the criteria of eligibility necessary for nomination to the National Register of Historic Places. In addition, site 45BN202 lies within the existing BPA transmission line right-of-way, along the shoreline of the Columbia River where the line crosses south to the Oregon side of the river. ~~No cultural materials or features were observed within this corridor.~~

One archaeological site, temporarily designated BP-1, was identified in this corridor, on the south side of the Columbia River, east of the southern abutment of the interstate bridge. This site consists of several concentrations of historic debris dating to approximately the 1930s, as well as a single obsidian flake that may be related to prehistoric site 35UM58. This site does not appear to meet any of the criteria of eligibility necessary for nomination to the National Register of Historic Places.

As noted above in the discussion of the archaeological record search, several archaeological sites have been documented along and adjacent to the Columbia River south of this alternative. Two of these sites (45BN71 and 45BN294) lie between 25 and 100 meters from the route of the Alternate Benton PUD/BPA Transmission Interconnection. This area is highly disturbed, however, and no indication of these sites was identified within the proposed project corridor.

(f) On page 3.10-9, Section 3.10.2.4 should be revised as follows:

3.10.2.4 Alternate 230/345-kV Transmission Interconnection

The existing 230-kV and 345-kV transmission lines are ~~is~~ located in the same physical location as the proposed 500-kV line. Therefore, similar to the proposed transmission

interconnection, construction of the alternate 230/345-kV transmission interconnection would have no effect on known cultural resources.

(g) Text beginning at the sixth paragraph on page 3.10-9 should be revised as follows:

~~No archaeological materials were observed within the alternate Benton PUD/BPA transmission interconnection corridor. As a result, construction of the line would have no effect on known cultural resources.~~ Site 45BN345, the remains of the Spokane, Portland, and Seattle railroad grade, parallels Christy road and the existing Benton PUD line. Consequently, approximately 2 miles of this grade is located within the proposed transmission interconnection corridor. As discussed above, this grade has been impacted by the construction of Christy Road, the existing transmission line, and a number of minor roads that leave Christy Road to access private parcels to the south. The grade thus shows poor integrity, and it therefore appears that this site does not meet the criteria of eligibility necessary for nomination to the National Register of Historic Places.

In addition, a number of archaeological sites have been documented along and adjacent to the Columbia River south of this alternative, and several of these have been determined eligible for nomination to the National Register of Historic Places. Two of these sites (45BN71 and 45BN294) lie between 25 and 100 meters from the route of the Alternate Benton PUD/BPA Transmission Interconnection. Because project activities along this segment of this alternative would be limited to replacing the existing Benton PUD transmission towers and reconductoring the line, this alternative would not be expected to affect these sites. In addition, this area is highly disturbed and no indication of these sites was identified within the proposed project corridor. However, the existence of these nearby documented sites indicated that the potential for the presence of archaeological resources within the corridor is high.

Two additional sites, 45BN202 and (temporary site number) BP-1, lie within or adjacent to the proposed Columbia River crossing. For both sites, because project activities at these locations would be limited to upgrading an existing transmission line with no ground disturbance expected to occur, no effect to these cultural resource sites would be expected. In addition, as mentioned above, it does not appear that site BP-1 meets any of the criteria of eligibility necessary for nomination to the National Register of Historic Places.

(h) Text beginning at the first paragraph on page 3.10-10 should be revised as follows:

~~No~~ Limited prehistoric archaeological materials were identified within the proposed plant site or ~~within any of the~~ infrastructure corridors. These materials are all associated with the Alternate Transmission Interconnection corridor. They include one historic railroad line (site 35BN345) located along Christy Road, one lithic scatter site (45BN202) located on the Washington shoreline of the Columbia River, and a 1930s historic trash scatter (temporary number BP-1) and single artifact (possibly related to prehistoric site 35UM58) located on the Oregon side of the Columbia River. If this alternative were

selected, appropriate mitigation measures would be implemented as deetermined through consultation with tribes and state historic preservation officers. Such measures could include flagging and avoidance of resources, and data collection and evaluation. ~~Therefore, the PGF would not result in impacts to known cultural resources. Although no archaeological materials were identified within the proposed plant site or within any of the infrastructure corridors,~~

In addition, it is possible that unidentified archaeological materials or features are present within the plant site or infrastructure corridors. Previously documented archaeological sites are present within one mile ~~If any such~~of the proposed PGF facility, as well as in the near vicinity of the Alternate Benton PUD/BPA Transmission Interconnection corridor. Although no prehistoric archaeological materials were ~~to~~ noted during inventory of these areas, they should be considered sensitive and may contain unidentified archaeological materials. Consequently, prior to construction of the selected alternative, probing to test for buried deposits in areas where ground-disturbing activities would occur should be conducted. Archaeological materials identified during the probing activities should be subject to additional testing, evaluation, and mitigation, if appropriate. Furthermore, construction and other ground-disturbing activities should be monitored. If any archaeological materials are encountered during these ~~construction or other ground-disturbing~~ activities, all activities in the vicinity should stop until the significance of the discovery ~~could be~~is evaluated by a qualified archaeologist. If the discovery were ~~to be~~ determined significant, mitigation would be necessary.

3.10.4 Mitigation Measures

As stated above in Section 3.10.3, if recorded archaeological resources present within the Alternate Transmission Interconnection corridor were determined significant and would be impacted, or if previously unidentified archaeological materials or features were to be discovered during construction or ground-disturbing activities, and the discovery ~~were to be~~ determined~~as~~ significant, mitigation would be necessary. As appropriate, t~~T~~he Washington or Oregon State Office of Archaeological and Historic Preservation would determine appropriate mitigation.

(i) The following references should be added to the References on pages 3.10-10 through 3.10-12:

Ames, Kenneth M. Sedentism: A Temporal Shift or a Transitional Change in Hunter-Gatherer Mobility Patterns. Pp. 108-134 in *Between Bands and States*. Susan Gregg, Ed. Southern Illinois University at Carbondale, Center for Archaeological Investigations. Occasional Paper No. 9. Carbondale.

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Chatters, James C. and David L. Pokotylo. Prehistory: Introduction. In *Plateau*, edited by Deward E. Walker, Jr., pp. 73-80. *Handbook of North American Indians*, volume 12. W.C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Cleveland, Gregory C., ed. Preliminary Archaeological Investigations at the Miller Site, Strawberry Island, 1976: A Late Prehistoric Village Near Burbank, Franklin Bounty, Washington. Washington State University. Washington Archaeological Research Center, Project Report No. 46. Pullman.

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1967 and 1968 Archaeological Excavations at the Mack Canyon Site: Interim Report 1968. University of Oregon, Museum of Natural History, Eugene.

Cressman, Luther S., David L. Cole, Wilbur A. Davis, Thomas M. Newman, and Daniel J. Scheans. 1960 Cultural Sequences at The Dalles, Oregon: A Contribution to Pacific Northwest Prehistory. *Transactions of the American Philosophical Society,* n.s. 50(10). Philadelphia.

Galm, Jerry R., Glenn D. Hartmann, Ruth A. Masten, and Garry Owen Stephenson. A Cultural Resources Overview of the Bonneville Power Administration's Mid-Columbia Project, Central Washington. Bonneville Cultural Resources Group Report No. 100-16, Cheney, Washington.

Hollenbeck, Jan L. A Cultural Resource Overview: Prehistory, Ethnography and History: Mt. Baker-Snoqualmie National Forest. Program Assessment by Madonna Moss. USDA Forest Service, Pacific Northwest Region, Portland, Oregon.

Johnston, Robbin T. Archaeological Evidence of Fishing in the Southern Plateau, a Cultural Area of the Columbia Plateau. M.S. Thesis in Anthropology, University of Idaho, Moscow.

Mehringer, Peter J., Jr. 1989 Age of the Clovis Cache at East Wenatchee, Washington. Washington State University, Department of Anthropology, Pullman: Report to the Washington State Historic Preservation Office.

Minor, Rick and Ruth L. Greenspan. The Umatilla Bridge Site: Pre-and Post-Mazama Occupation in the Middle Columbia River Region, Oregon and Washington. Heritage Research Associates Report No. 240, Eugene, Oregon.

Minor, Rick, and Kathryn Anne Toepel 1986 Archaeological Assessment of the Bob's Point Site (45KL219), Klickitat County, Washington. *Occasional Papers of the Idaho Museum of Natural History* 34. Pocatello.

Musil, Robert R. 1984 Hobo Cave: A Resurrection. Ms. On file, Oregon Museum of Anthropology, University of Oregon, Eugene.

Nelson, Charles M. Prehistoric Culture Change in the Intermontane Plateau of Western North America. Pp. 371-300 in The Explanation of Culture Change: Models in Prehistory. Proceedings of a Meeting of the Research Seminar in Archaeology and Related Subjects. Held at the University of Sheffield, 1971. Collin Renfrew, ed. London: Duckworth.

Schalk, Randall F. Cultural Resource Investigations for the Second Powerhouse Project at McNary Dam, Near Umatilla, Oregon. Laboratory of Archaeology and History, Washington State University. Pullman.

Schalk, Randall F., and Gregory C. Cleveland. 1983 A Chronological Perspective on Hunter-Gatherer Land Use Strategies in the Columbia Plateau. Pp. 11-56 in Cultural Resource Investigations for the Lyons Ferry Fish Hatchery Project, Near Lyons Ferry, Washington. Randall F. Schalk, ed. *Washington State University Laboratory of Archaeology and History, Project Report No. 8*. Pullman.

Shiner, Joel L. 1961 The McNary Reservoir: A Study in Plateau Archeology. River Basin Surveys Papers, No. 23. *Smithsonian Institution Bureau of American Ethnology*, Bulletin 179:149-266. Washington, D.C.

Thomison, Patrick. When Celilo Was Celilo: An Analysis of Salmon Use During the Past 11,000 Years in the Columbia Plateau. M.A. Thesis in Anthropology, Oregon State University, Corvallis.

Walker, Deward E., Jr. 1998 Introduction. In *Plateau*, edited by Deward E. Walker, Jr., pp. 73-80. *Handbook of North American Indians*, volume 12. W.C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Warren, Claude N., Allan L. Bryan., and Donald R. Tuohy. 1963. The Goldendale Site and Its Place in Plateau Prehistory. *Tebiwa* 6(1):1-21.

II.B.10 Section 3.11 Transportation

(a) On page 3.11-5, the first sentence of the first paragraph should be revised as follows:

Input for the LOS analysis of the unsignalized intersection of SR 14 and Plymouth Road included the peak hour traffic count (listed in Table 3.11-1), the intersection data from WSDOT, truck percentages data from WSDOT, and geometric road information (e.g., number of lanes, width, configuration, and grade) (Eldr~~i~~ed 2002).

(b) On page 3.11-7, Section 3.11.1.3 should be revised as follows:

3.11.1.3 Alternate 230/345-kV Transmission Interconnection

The existing conditions for the alternate 230/345-kV transmission interconnection would be the same as the existing conditions for the proposed transmission interconnection because the existing 230-kV and 345-kV lines are ~~is~~ in the same physical location as the proposed 500-kV line.

(c) On page 3.11-14, Section 3.11.2.4 should be revised as follows:

3.11.2.4 Alternate 230/345-kV Transmission Interconnection

The impacts attributable to the 230/345-kV transmission interconnection would be the same as the impacts attributable to the proposed transmission interconnection because the existing 230-kV and 345-kV lines are ~~is~~ located in the same physical location as the proposed 500-kV line.

(d) On page 3.11-19, the third reference should be revised as follows:

Eldr~~i~~ed, Doug, WSDOT, Yakima. 2002. Personal communication with Julie Blakeslee of URS. March 5, 2002.

II.B.11 Section 3.12 Public Services and Utilities

(a) On page 3.12-6, Section 3.12.1.3 should be revised as follows:

3.12.1.3 Alternate 230/345-kV Transmission Interconnection

The existing conditions for the alternate 230/345-kilovolt (kV) transmission interconnection would be the same as the existing conditions for the proposed transmission interconnection because the existing 230-kV and 345-kV lines are ~~is~~ located in the same physical location as that proposed 500-kV line.

(b) On page 3.12-13, Section 3.12.2.4 should be revised as follows:

3.12.2.4 Alternate 230/345-kV Transmission Interconnection

Impacts due to the alternate 230/345-kV transmission interconnection would be the same as those that occur due to the proposed transmission interconnection, because the existing 230-kV and 345-kV lines are ~~is~~ located in the same physical location as the proposed 500-kV line.

II.B.12 Section 3.13 Socioeconomics

(a) On page 3.13-12, Section 3.13.1.4 should be revised as follows:

3.13.1.4 Alternate 230/345-kV Transmission Interconnection

The existing condition for the 230/345-kilovolt (kV) transmission interconnection would be the same as for the proposed transmission interconnection because the existing 230-kV and 345-kV lines are ~~is~~ located in the same physical location as the proposed 500-kV line.

(b) On page 3.13-17, Section 3.13.2.3 should be revised as follows:

3.13.2.3 Alternate 230/345-kV Transmission Interconnection

Impacts attributable to the alternate 230/345-kV transmission interconnection would be the same as those attributable to the proposed transmission interconnection because the existing 230-kV and 345-kV lines are ~~is~~ located in the same physical location as the proposed 500-kV line.

II.C REVISIONS TO CHAPTER 4.0 OF THE DEIS

(a) Table 4-1 of the DEIS has been revised as follows.

Table 4-1
Plymouth Energy Project Permits and Approvals

Type of Permit/Approval	Permit or Requirement	Lead Agency	Comments
Air-related permits	Notice of Construction Approval (Air Permit)	Benton Clean Air Authority	• ~~Accepted complete May 2002~~Submitted to BCAA.
	Acid Rain Certificate	Benton Clean Air Authority	• ~~Filed June 2002~~Certificate of Representation submitted to U.S. EPA on September 4, 2002.
	Title V Air Operating Permit	Benton Clean Air Authority	• Permit to be filed after PGF is in operation.~~-~~
Land use approvals	• Conditional Use Permit • SEPA Compliance/EIS	Benton County	• SEPA Checklist/CUP Application ~~to initiate~~filed Dec. 17, 2001. • SEPA compliance via joint Benton County/BPA EIS
Approvals related to the transmission interconnection	• Transmission Interconnection Agreement • Record of Decision • NEPA Compliance/EIS	BPA	• NEPA compliance via joint Benton County/BPA EIS
Consultation	ESA Concurrence	U.S. Fish and Wildlife Service/National Marine Fisheries Service	• ~~Concurrence that there will be no impact on listed species~~Consultation completed per USFWS Oct. 22, 2002 letter.
	• Native American Consultation • Traditional Cultural Properties Survey	BPA	• Consultation ongoing.~~-~~
	Aviation Obstruction Zone	Federal Aviation Administration	• ~~Concurrence that project is not an obstacle to aviation~~FAA issued a Determination of No Hazard to Air Navigation for the PGF on January 23, 2003.
Other required permits	Water Rights Transfer	Benton County Water Conservancy Board (Dept. of Ecology)	• Approved by Benton County Water Conservancy and Ecology. • ~~Ecology approval pending~~
	Construction Storm Water Discharge Permit	Dept. of Ecology	• To be filed prior to start of construction.~~-~~
	Industrial Storm Water Permit	Dept. of Ecology	• Under general state permit • Will complete once PGF is under construction.
	Industrial Waste Discharge Permit	Dept. of Ecology	• Engineering report – agricultural use of wastewater.
	Sanitary Waste Discharge Permit	Benton Franklin Health District	• Construction of a septic system for sanitary waste • To be filed prior to start of construction.
	Building Permits and Grading Permit	Benton County	• EPC contractor will complete.~~-~~
	Highway Access Permits	Benton County/WSDOT	• To be determined.
	Hydraulic Project Approval	Washington Dept. of Fish & Wildlife	• Proposed access road crossing of Fourmile Canyon • Submitted JARPA application in May 2003.
	Dam Safety Letter/Permit	Washington State Department of Natural Resources	

BPA = Bonneville Power Administration
CUP = Conditional Use/Special Permit
Ecology = Washington State Department of Ecology
ESA = Endangered Species Act
NEPA = National Environmental Policy Act
SEPA = State Environmental Policy Act
WSDOT = Washington State Department of Transportation

II.D APPENDIX B2 – CONTRIBUTION TO REGIONAL HAZE

(a) The following text should be added after the third sentence in the third paragraph on the first page.

Note there has been a significant change in the energy market since this baseline source group was identified. The current status of several projects, including those in Wallula and Satsop, is uncertain.

(b) The following text should be added after the first paragraph on page 5.

A different and more conservative approach to evaluating cumulative impacts is to assume existing sources cause visibility degradation every day of the year. The analysis then considers how often the PGF would contribute to visibility degradation of 0.4 percent or greater, which is the established FLAG2 criterion for this cumulative analysis. This assessment conservatively assumes that the background visibility is representative of the best 10 percent visibility days. Thus, this methodology evaluates impacts based on a good visibility day while applying the impact criterion that applies when the cumulative impact of all man-made sources causes a bad visibility day. Despite these conservative assumptions, the analysis predicted that emissions attributable to PGF could exceed the 0.4 percent change criterion on only 14 days of the year. The results for CRGNSA are summarized in Table 5. Given the conservative nature of this analysis, the PGF's contribution to cumulative visibility degradation in the CRGNSA is not likely to be significant.Another conservative approach to assessing PGF's contribution to visibility degradation involves making a new assumption concerning the facility's volatile organic compound (VOC) emissions. The extent to which emissions of VOCs contribute to visibility degradation remains a topic of research. However, an additional visibility assessment used the conservative assumption that all VOCs emitted by PGF are instantly converted to secondary organic aerosols. Using this assumption, the maximum reduction in visibility in the CRGNSA attributable to PGF would increase from 1.57 to 2.32 percent, which remains well below the 5-percent FLAG criterion established for individual sources. Using this assumption, the number of days when PGF emissions could affect visibility by more than the 0.4 percent FLAG criterion for cumulative impacts increased from 14 (Table 5) to 17 (Table 6).

Several conservative assumptions contribute to this result:

- all VOCs are instantly converted to secondary organic aerosols;
- visibility in the CRGNSA is degraded by existing sources more that 10% for every day of the year;
- background aerosol concentrations in the CRGNSA represent excellent visual conditions for the calculation of the background scattering coefficient (approximately the 90^{th} percentile best visibility);
- no weather phenomena (such as fog) are present that obscure the affects of the predicted change to the extinction coefficient;

- the predicted extinction coefficient is applicable to the entire visual path length from observer to target;
- good visibility in the CRGNSA is equally important for all days and hours of the years; and
- the PGF emits at it's maximum permitted emission rates for all hours of the year.

This series of conservative assumptions results in exaggerated indication of potential regional haze impacts in the CRGNSA.

(c) Table 5 should be renamed "Table 7," and the following two tables should be inserted after Table 4.

Table 5. CRGNSA haze impacts attributable to PGF assuming low background extinction but applying the 0.4% visibility impact criterion

	Maximum Extinction Attributable to PGF (1/Mm)	Maximum Change in Extinction (%)	Number of Days With Significant Change in Extinction
Spring	0.088	0.31	0
Summer	0.099	0.39	0
Fall	0.322	1.08	10
Winter	0.374	1.57	4
Max/Total	0.374	1.57	14

Table 6. CRGNSA Haze Impacts Attributable to PGF assuming low background extinction and that all VOC emissions form secondary aerosols, and applying the 0.4% impact visibility criterion

	Maximum Extinction Attributable to PGF (1/Mm)	Maximum Change in Extinction (%)	Number of Days With Significant Change in Extinction
Spring	0.121	0.43	0
Summer	0.138	0.54	1
Fall	0.394	1.30	10
Winter	0.535	2.32	6
Max/Total	0.535	2.32	17

United States Department of Agriculture | Forest Service | Pacific Northwest Region
333 SW First Avenue (97204)
PO Box 3623
Portland, OR 97208-3623
503-808-2468

File Code: 2580
Date: October 15, 2002

Mr. Robert Beraud
Plymouth Generating Facility Comments
BPA Communications Office KC-7
Bonneville Power Administration
P.O. Box 12999
Portland, OR 97212

Dear Mr. Beraud:

We have reviewed the Plymouth Generating Facility Draft Environmental Impact Statement (DEIS). Specific comments are included in an enclosure to this letter.

Our comments on this draft are similar to those we made recently on the Wallula Project EIS. Our overarching concerns center on the fact that previous decisions have resulted in a power transmission grid infrastructure that is a magnet for continued power plant development along it's length. The full cumulative effect on the regions Class I areas and the Columbia River Gorge past, present and future has not been revealed. We do recognize this development is inevitable (note our recent letter to EPA, enclosed), however, that very fact indicates the air quality related issues raised will continue to worsen unless mitigation (full offsets) is required from every new source. A-1 A-2

The draft Plymouth EIS seems to have lost the progress made in the Wallula final in that the authors fail to recognize the acid deposition, ecosystem disturbance, and cultural resources issues that have been identified in the Columbia River Gorge and potentially in the regions Class I areas.

In winter the Gorge is the primary recipient of the stagnant polluted air that drains out of the Columbia Basin; that is almost certainly a major contributor to the ecosystem and cultural resource deterioration. Every new source or emission increase, regardless of size, exacerbates this problem as long as there is no requirement for mitigation. There is no leverage under the Clean Air Act or the State permitting rules to deal with the contributions power plants make to these problems in the Gorge. This is a Federal issue that can only be dealt with at the Federal Level.

RESPONSE TO COMMENT A-1

Several comments noted that existing air quality in the Columbia River Gorge National Scenic Area (CRGNSA) was impaired and that the cumulative effect of additional emissions from Plymouth Generating Facility had not been adequately evaluated.

Existing air quality in the CRGNSA is generally good, with relatively low average $PM_{2.5}$ concentrations (about 6 µg/m3). Ozone concentrations are comparable to those in urban areas of western Oregon and Washington. There are, however, some concerns about visibility degradation in the CRGNSA.

A U.S. Forest Service (USFS) issues paper focusing on the Gorge indicates that "the primary sources of air pollutants in the Gorge come from the Portland/Vancouver area and from sources within the Scenic Area" (USDA 2002). The Forest Service issues paper explains: *"The USDA FS is collaborating with the air regulatory community from Oregon and Washington as well as the EPA, and visibility research organizations in an ongoing monitoring and analysis project to attempt to fully understand the nature of visibility impairment in the Scenic Area. Until this effort is concluded, and some of the current uncertainties are explained, with an unbiased scientific approach, it is premature to speculate about causes."*

The Draft Environmental Impact Statement (EIS) considers the effect that PGF emissions would have on existing air quality and visibility in the CRGNSA, as well as the cumulative effect on air quality and visibility of emissions from the PGF and other power plants proposed for the area.

The Draft EIS assesses cumulative effects in two ways. The first assessment was intended to evaluate the cumulative effects of foreseeable future sources on local air quality. It considered eight other existing and reasonably realistic proposed power plants in the vicinity of PGF, and evaluated local air quality impacts using the ISCST model (see Appendix B1 in the Draft EIS). That assessment demonstrated that the cumulative effects on local air quality would be well below established ambient air quality standards.

The second assessment was intended to evaluate the cumulative effect of foreseeable future emission sources on regional air quality and visibility. It considered 14 other recently-permitted or proposed power plants in the Pacific Northwest. That assessment included such local projects as Hermiston Power, Coyote Springs 2, Goldendale Energy Center, the "Cliffs" project in Goldendale, Wallula Power, and the Confederated Tribes' Wanapa Energy Center. The assessment followed a procedure that BPA previously applied to evaluate regional cumulative air quality impacts from 45 proposed power plants throughout Washington, northern Idaho, and northern Oregon. The original analysis indicated that even assuming that all 45 power plants were built and operating, cumulative ambient concentrations would represent a small fraction of ambient air quality standards. Many of these 45 proposed plants are no longer under active development. That study also determined that deposition of nitrogen and sulfur would be very small in comparison with existing deposition rates and criteria suggested by the USFS. The study concluded that the only concern if all 45 power plants were built and operating would be the potential for visibility degradation in Class I areas on days that would otherwise have very good visibility.

Therefore, BPA began evaluating new proposed power projects individually, using the same dispersion modeling procedures and assessment criteria. BPA began with a "baseline" group of power plants that had recently come on line or that BPA determined were reasonably likely to be constructed. The concept was to start with projects that were not yet included in ambient measurements of pollutant concentrations and other measures of air quality, but were highly likely to be completed and come on line. As a new power plant rose to the top of the queue awaiting connection to BPA's grid, its emissions would be added to the baseline group to assess both the individual plant's contribution to visibility impacts and the cumulative impact of the entire group of projects on visibility. As discussed in Appendix B-2 of the Draft EIS, 14 power plants were added to the baseline group prior to the evaluation of PGF. However, it is now unclear whether several of the power plants considered in this analysis will be completed in the foreseeable future (e.g. Wallula Power, the Wanapa Energy Center, Satsop, Mint Farm, Goldendale).

The USFS was a participant in a national forum of governmental air quality agencies that established procedures and criteria for evaluating visibility impacts from new industrial sources. The FLAG2 protocol identified the change in 24-hour average extinction as the appropriate metric for evaluating visibility impacts. Based on the FLAG2 criteria, an impact occurs when the proposed source causes a 5 percent change in extinction on a very clear day (a day with visibility equal to or better than 97.5 percent of other days).[1] The evaluation of PGF indicated that its emissions would never cause a 5 percent or greater reduction in visibility in Class I areas or the CRGNSA. Therefore, the Draft EIS concludes that the PGF's emissions would not have a significant adverse impact on visibility, even on days with very good visibility.

A second FLAG2 criterion states that on clear[2] days when cumulative visibility impacts result in a 10 percent change in extinction, the individual source contribution to extinction should be less than 0.4 percent. The BPA protocol considers the cumulative impact to be that attributable to the baseline power plants and subsequent power plants that were allowed to connect to the grid. The Draft EIS analysis indicates that PGF's contribution would exceed 0.4 percent criteria on only one day per year at the CRGNSA and one day per year at Mt. Hood Wilderness Area. This assessment is based on conservative assumptions, as discussed in the Draft EIS.

In addition to evaluating potential visibility and deposition impacts (see Responses to Comments A-9, A-10 and A-12), the CALPUFF modeling system was used to assess concentrations of NOx, PM_{10}, and SO_2 attributable to emissions from the facility in Class I areas and the CRGNSA (see Table A-1-1, which has been added as Table 3.2-9 of the EIS). The results indicate that PGF would not significantly contribute to concentra-

1 For the CRGNSA and Spokane Indian Reservation, the BPA regional haze modeling assessment based background aerosol concentrations on top 20 percent days with the best visibility. These data were provided by the USFS for the CRGNSA and allow for a more realistic assessment that considers existing development and urban areas within the CRGNSA.

2 Clear days are defined (as above) as those days with visibility equal to or greater than 97.5 percent of other days.

Table A-1-1
Maximum Concentration Predictions Attributable to PGF Emissions (µg/m3)

Area [a]	Annual Average NO_2 [b]	Annual Average PM_{10} [c]	Annual Average SO_2	24-hour PM_{10} [c]	24-hour SO_2	3-hour SO_2
Diamond Peak Wilderness	0.0000	0.0001	0.0000	0.005	0.001	0.002
Three Sisters Wilderness	0.0000	0.0003	0.0001	0.009	0.002	0.006
Mt. Jefferson Wilderness	0.0000	0.0004	0.0001	0.012	0.003	0.009
Strawberry Mtn. Wilderness	0.0000	0.0004	0.0001	0.016	0.005	0.019
Mt. Hood Wilderness	0.0001	0.0009	0.0002	0.033	0.009	0.021
CRGNSA	0.0003	0.0016	0.0005	0.080	0.021	0.048
Eagle Cap Wilderness	0.0001	0.0007	0.0002	0.013	0.004	0.019
Hells Canyon Wilderness	0.0001	0.0007	0.0002	0.009	0.003	0.016
Mt. Adams Wilderness	0.0000	0.0004	0.0001	0.011	0.002	0.010
Goat Rocks Wilderness	0.0000	0.0003	0.0001	0.010	0.002	0.006
Mt. Rainier National Park	0.0000	0.0002	0.0000	0.007	0.001	0.005
Olympic National Park	0.0000	0.0001	0.0000	0.005	0.001	0.003
Alpine Lakes Wilderness	0.0000	0.0002	0.0001	0.007	0.002	0.006
Glacier Peak Wilderness	0.0000	0.0002	0.0000	0.006	0.002	0.004
North Cascades National Park	0.0000	0.0001	0.0000	0.004	0.001	0.003
Pasayten Wilderness	0.0000	0.0002	0.0000	0.004	0.001	0.003
Mt. Baker Wilderness	0.0000	0.0001	0.0000	0.003	0.001	0.002
Spokane Indian Reservation	0.0002	0.0010	0.0003	0.013	0.005	0.019
Maximum	0.0003	0.0016	0.0005	0.08	0.021	0.048
EPA Proposed Class I SIL	0.1000	0.2000	0.1000	0.300	0.200	1.000
Percent of Class I SIL	0.3	1	1	27	11	5

[a] CRGNSA and Mt. Baker Wilderness areas are not Class I areas.

[b] All NOx is assumed to be converted to NO_2

[c] PM_{10} includes sulfates and nitrates.

tions of these key pollutants at any Class I area or the CRGNSA. The ambient impacts predicted to result from PGF emissions are so small that those emissions would not contribute to significant cumulative effects when combined with other sources, so a more detailed cumulative assessment was not warranted.

The Draft EIS focuses on the impacts associated with the proposed project, in comparison to the No Action Alternative, and therefore addresses only recently permitted and proposed power plants. Two types of analyses were conducted to determine the PGF's potential impacts on visibility. Both use conservative assumptions, which likely overstate project impacts. The first analysis assumes that every day of the year currently has excellent visibility. By assuming that current visibility is always excellent, rather than by taking into account visibility degradation that currently occurs on some days as a result of natural conditions or emissions from existing sources, the analysis overstates the potential effect of PGF emission on visibility. The results of this analysis are then compared to established FLAG2 criteria. If the established criteria indicate that PGF emissions would not cause a significant cumulative effect on visibility, then a more detailed quantitative analysis of every existing and potential source of air pollution and its impact on visibility is not necessary.

The second analysis uses a more conservative approach to evaluating cumulative impacts by assuming existing sources cause visibility degradation every day of the year. The analysis then considers how often the PGF would contribute to visibility degradation of 0.4 percent or greater. This assessment conservatively assumes that the background visibility is representative of the best 10 percent visibility days. In other words, we evaluate impacts based on a good visibility day while applying the impact criterion that applies when the cumulative impact of all man-made sources causes a bad visibility day. Despite these conservative assumptions, the analysis predicted that emissions attributable to PGF could exceed the 0.4 percent change criterion on only 14 days of the year. The results for CRGNSA are summarized in Table A-1-2, which has been added as Table 5 of Appendix B2 to the EIS. Given the

Table A-1-2
CRGNSA Haze Impacts Attributable to PGF

	Maximum Extinction Attributable to PGF (1/Mm)	Maximum Change in Extinction (%)	Number of Days With Significant Change in Extinction
Spring	0.088	0.31	0
Summer	0.099	0.39	0
Fall	0.322	1.08	10
Winter	0.374	1.57	4
Max/Total	0.374	1.57	14

Reference:

United States Department of Agriculture (USDA), 2002. Air Quality Issues in the Columbia River Gorge National Scenic Area. USDA FS, Region 6, Air Resource Management Staff. http://www.fs.fed.us/r6/aq/gorgis.pdf

conservative nature of this analysis, the PGF's contribution to cumulative visibility degradation in the CRGNSA is not likely to be significant. The PGF would implement the best available emissions control technology, which minimizes potential impacts to air quality and visibility.

RESPONSE TO COMMENT A-2

The PGF has adopted all applicable and economically feasible control technologies and is in compliance with all regulatory requirements for criteria pollutants and air toxics. Because these technologies serve to mitigate the potential air quality impacts of the proposed project to the greatest extent feasible, BPA and Benton County believe that they have considered all reasonable mitigation for the potential impacts of the proposed project. As indicated by the commentor, neither the Clean Air Act nor the State permitting rules provide measures to require additional mitigation to offset power plants' contributions to air quality problems in the Gorge. The BPA has no statutory obligation to impose additional mitigation to offset visibility impacts, and does not believe that it is necessary for the PGF.

Further, USFS studies indicating acid deposition, ecosystem disturbance, and cultural resource issues in the CRGNSA are acknowledged. However, no studies confirm the degree to which sources in the Columbia plateau are responsible for impacts in the CRGNSA. Requesting emission reductions from power plants (especially for gas-fired power plants such as PGF) is premature when it cannot be demonstrated that such emission reductions would have a noticeable benefit to the CRGNSA. Another approach would be to require new sources to implement the best available emission control technology and to demonstrate that the resulting emissions would not result in a significant increase in ambient air concentrations of pollutants. If scientifically sound studies demonstrate that emissions from the Columbia Basin (as opposed to the Vancouver/Portland metropolitan area) are responsible for air quality problems in the CRGNSA and that power plants are a primary contributor to the problem, power plant emission reductions could be considered.

The CALPUFF simulations of PGF emissions were used to evaluate total sulfur and nitrogen (which includes nitrogen present as background ammonium) deposition. The results are presented in Table A-2-1, which has been added as Table 3.2-8 of the EIS. The maximum total deposition (including both wet and dry deposition) attributable to PGF in the CRGNSA was estimated to be 0.00029 kg/ha/yr for sulfur and 0.00018 kg/ha/yr for nitrogen.

The USFS has indicated that total deposition of less than 3 kg/ha/yr for sulfur and 5 kg/ha/yr for nitrogen are unlikely to significantly affect terrestrial ecosystems in the Pacific Northwest forests.[3] The Washington Department of Ecology (Ecology) has further identified a value of 0.2 percent of these total deposition values as an indicator of "significance" for a single project (analogous to the Significant Impact Levels (SILs) established by the Environmental Protection Agency (EPA) for criteria

[3] Peterson, J. et al. 1992: *Guidelines for Evaluating Air Pollution Impacts on Class I Areas in the Pacific Northwest*. USDA Forest Service. General Technical Report PNW-GTR-299, May, 1992.

pollutants). As shown in Table A-2-1, the impacts attributable to PGF are tiny fractions of existing deposition levels in the CRGNSA and the USFS recommended cumulative deposition criteria, and less than 7 percent of the Ecology significance levels. It is very unlikely that pollutants from PGF would significantly impact the ecosystem.

Table A-2-1
Annual Total Deposition Analysis Results

	Annual SulfurDeposition (kg/ha/yr)				Annual Nitrogen Deposition (kg/ha/yr)			
Area	Back-ground	PGF	Total	Change (%)	Back-ground	PGF	Total	Change (%)
Diamond Peak Wilderness	4.000	0.00006	4.000	0.001	2.200	0.00003	2.200	0.002
Three Sisters Wilderness	5.600	0.00023	5.600	0.004	3.600	0.00015	3.600	0.004
Mt. Jefferson Wilderness	4.000	0.00023	4.000	0.006	1.800	0.00015	1.800	0.009
Strawberry Mtn. Wilderness	1.400	0.00010	1.400	0.007	1.200	0.00006	1.200	0.005
Mt. Hood Wilderness	8.600	0.00022	8.600	0.003	5.400	0.00013	5.400	0.002
CRGNSA	12.000	0.00029	12.000	0.002	10.000	0.00018	10.000	0.002
Eagle Cap Wilderness	1.600	0.00025	1.600	0.015	1.600	0.00016	1.600	0.010
Hells Canyon Wilderness	1.400	0.00027	1.400	0.019	1.200	0.00018	1.200	0.015
Mt. Adams Wilderness	10.800	0.00010	10.800	0.001	9.000	0.00006	9.000	0.001
Goat Rocks Wilderness	11.800	0.00008	11.800	0.001	9.000	0.00005	9.000	0.001
Mt. Rainier National Park	3.100	0.00005	3.100	0.002	2.400	0.00004	2.400	0.002
Olympic National Park	5.600	0.00003	5.600	0.000	2.000	0.00002	2.000	0.001
Alpine Lakes Wilderness	7.200	0.00010	7.200	0.001	5.200	0.00008	5.200	0.002
Glacier Peak Wilderness	8.000	0.00007	8.000	0.001	5.800	0.00005	5.800	0.001
North Cascades National Park	3.500	0.00006	3.500	0.002	5.200	0.00004	5.200	0.001
Pasayten Wilderness	7.200	0.00011	7.200	0.002	5.200	0.00009	5.200	0.002
Mt. Baker Wilderness	No Data	0.00005			No Data	0.00003		
Spokane Indian Reservation	No Data	0.00041			No Data	0.00026		
Maximum		0.00041	12	0.019		0.00018	10	0.015
USFS Criteria			3.000				5.000	
Ecology single-project significance level		0.006				0.010		

It would be very beneficial if our agencies along with the Environmental Protection Agency, could come to grips with this issue in a holistic, all encompassing agreement that embraces this issue for the future. We appreciate the opportunity to comment and look forward to working collaboratively with you toward a mutually agreeable solution.

Sincerely,

/s/ *Calvin N. Joyner*
CALVIN N. JOYNER
Director, Natural Resources

Enclosures

cc:
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Edit: canderson: NR9: 10/15/02

Enclosure

Plymouth Generating Facility
Specific comments.

1. Page 1-10. Section 1.8.2 Local and Regional Cumulative Impacts
The paragraph dealing with Air Quality states in part: "…Both cumulative air quality and regional haze evaluations found that the PGF would not contribute to significant cumulative impacts…." As we have stated in the cover letter and in several prior communications this is not true. Cumulative effects are occurring from existing transmission grid sources – adding new sources without mitigation continues to exacerbate this problem. A-3

2. Page 3.2-3. Section 3.2.1.2 The air quality analysis presented is based on five years of meteorology from the Pendleton Airport. Because of complex terrain around Pendleton and the effect of the Columbia River at Plymouth there is very likely little relationship between the surface or boundary layer meteorological conditions at these two locations, which renders any conclusions made from this data questionable. On site meteorology from other energy facilities or the Umatilla Depot along the river in the Plymouth vicinity is almost certainly available. A-4

3. Page 3.2-18 & 19. Section 3.2.3 It is recognized in this paragraph that a cumulative effect air quality analysis, including both existing and proposed energy facilities is needed to assess local ambient pollutant concentrations. Yet this same logic is not applied in the visibility analysis. In a later paragraph in this section the assertion is made that the visibility analysis that was done "significantly overstates potential impacts from power generation." This is a very misleading and incorrect statement. The existing sources were not included – the Boardman Coal Plants emissions alone exceed the emissions from all the proposed sources combined. Many of the existing gas fired facilities in this vicinity were built with less efficient emission control technology than is used today – omitting these sources further biases the visibility analysis on the low side. A-5

3. Page 3.2-19. Fourth para. The logic in this paragraph reflects bias and a lack of objectivity. This is a NEPA document where potential environmental impacts are to be revealed. The incomplete emission inventory used and the inherent limitations of air quality models are such that it is much more likely that this visibility analysis under predicted impacts. As an example the sizable volatile organic compounds emitted by all these facilities are not included in visibility analyses, but they are nevertheless significant contributors to visibility impairment. It would be better if this paragraph were removed -- convincing counter arguments can be made for every point in this paragraph. A-6

4. Page 3.14-7. Table 2.14-2 Potential Cumulative Impacts
Item 1 Goldendale Energy Project – there is no doubt this facility will contribute to a cumulative visibility impact in the CRGNSA. The table indicates cumulative impact is unlikely. A-7

5. Appendix B2 Regional Haze Analysis
In the second to last paragraph there is a discussion similar to that in item 3 above. The wintertime acid deposition problem in the Gorge is not recognized in this EIS. A-8

RESPONSE TO COMMENT A-3

The sentence summarizing cumulative air quality impacts was not worded precisely, and is corrected both in Chapter I of this Final EIS, and in Chapter II, Errata to the Draft EIS. Rather than imply that no air quality impacts exist in the CRGNSA, the summary paragraph should have indicated the PGF would not significantly contribute to any air quality impacts in the CRGNSA. Furthermore, the paragraph should have referred to Class I areas rather than Class A areas. See also Response to Comments A-1, A-2, and I-16.

RESPONSE TO COMMENT A-4

The Benton Clean Air Authority recommended that meteorological data from Pendleton Airport is used in the local air quality evaluation summarized in the Draft EIS. In response to this comment, five years of hourly meteorological data (1996-2000) were obtained from a monitoring station operated by the Umatilla Army Depot outside of Umatilla, Oregon. These data were combined with twice-daily mixing heights from the Spokane Airport. Those meteorological data were formatted for use in the ISCST3 dispersion model that was previously applied for the air quality permit application and the Draft EIS air quality assessment.

Use of the Umatilla meteorological data, instead of the Pendleton airport data, did not significantly change the modeling results. Revised versions of Tables 3.2-5 and 3.2-6 from the Draft EIS are presented below as Tables A-4-1 and A-4-2. The modeling analysis based on the alternative meteorological data resulted in lower 1-hour average and annual average pollutant concentrations, but higher predicted 3-hour, 8-hour, and 24-hour average pollutant concentrations. While none of these concentrations exceed ambient air quality standards, predicted 24-hour average concentrations of SO_2 and PM_{10} using UAD data slightly exceed the SILs. However, these SIL exceedances are not considered indicative of a significant air quality impact because the predicted amount of exceedance is minimal, the conservative modeling approach likely overestimates predicted concentrations, the SILs are only initial threshold screening criteria, and the predicted 24-hour average SO_2 and PM_{10}

concentrations are small fractions of the ambient standards. Similarly, predicted annual average concentrations of toxic air pollutants (TAPs) decreased using the Umatilla meteorological data, but predicted 24-hour average concentrations increased. Table A-4-2 demonstrates that predicted TAP concentrations attributable to PGF comply with all applicable Acceptable Source Impact Levels.

Table A-4-1 (Revised Table 3.2-5 in the Draft EIS)
Maximum Criteria Pollutant Predictions

Pollutant	Averaging Period	Maximum PGFMore Stringent of ConcentrationNAAQS or WAAQS (µg/m3)	(µg/m3)	SIL (µg/m3)
NO_2 [(a)]	Annual	0.85	100	1
SO_2	1-Hour	26	1,000	(b)
	3-Hour	19	1,300	25
	24-Hour	8.6	365	5
	Annual	0.14	80	1
CO	1-Hour	113	40,000	2,000
	8-Hour	62	10,000	500
PM_{10}	24-Hour	5.3	150	5
	Annual	0.32	50	1

[(a)] Assumes 100 percent conversion of NOx to NO_2

[(a)] A SIL has not been established for 1-hour SO_2

Table A-4-2 (Revised Table 3.2-6 in the Draft EIS)
Maximum 24-Hour and Annual Toxic Air Pollutant Concentrations

Compound	Averaging Period	Concentrations Attributable to Each Source: HRSG Generator Stack	Standby Generator	Fire Pump	Combined Concentration	ASIL	Over ASIL?[a]
				(µg/m³)	(µg/m³)	(µg/m³)	
1,3-Butadiene	Annual	1.4E-05	0	0	0.00001	0.0036	No
Acetaldehyde	Annual	1.3E-03	5.5E-06	3.4E-06	0.001	0.45	No
Ammonia	24-Hour	4.4	0	0	4.4	100	No
Arsenic	Annual	1.1E-06	0	0	0.000001	0.00023	No
Benzene	Annual	4.1E-04	1.7E-04	1.0E-04	0.0007	0.12	No
Benzo(a)pyrene	Annual	6.8E-09	0	0	0.00000001	0.00048	No
Beryllium	Annual	6.8E-08	0	0	0.0000001	0.00042	No
Cadmium	Annual	6.2E-06	0	0	0.000006	0.00056	No
Chromium VI	Annual	3.9E-06	0	0	0.000004	0.000083	No
Formaldehyde	Annual	2.4E-02	1.7E-05	1.1E-05	0.02	0.077	No
Lead	Annual	2.8E-06	0	0	0.000003	0.5	No
Nickel	Annual	1.2E-05	0	0	0.000012	0.0021	No
Nitric Oxide	24-Hour	4.8	5.1	4.3	14	100	No
PAH	Annual	7.3E-05	9.8E-07	6.0E-07	0.00007	0.00048	No
Propylene Oxide	Annual	9.6E-04	0	0	0.001	0.27	No
Sulfuric Acid	24-Hour	0.454	0	0	0.5	3.3	No

[a] ASILs = Acceptable Source Impact Levels

Thus, model results based on both sets of meteorological data indicate emissions from PGF would have a negligible impact on local air pollutant concentrations.

RESPONSE TO COMMENT A-5

See Response to Comment A-1.

RESPONSE TO COMMENT A-6

The opinion of the commentor is noted. However, BPA and Benton County believe that the referenced paragraph accurately describes possible overestimation of visibility impacts. Regarding volatile organic compounds (VOCs), the extent to which emissions of VOCs contribute to visibility degradation remains a topic of research and disagreement. However, in response to this comment MFG reexamined the visibility assessment using the conservative assumption that all VOCs emitted by PGF are instantly converted to secondary organic aerosols. Using this assumption, the maximum reduction in visibility in the CRGNSA attributable to PGF would increase from 1.57 to 2.32 percent, which remains well below the 5-percent FLAG criterion established for individual sources. Using this assumption, the number of days when PGF emissions could affect visibility by more than the 0.4 percent FLAG criterion for cumulative impacts increased from 14 to 17 (Table A-6-1).

Table A-6-1
CRGNSA Haze Impacts Attributable to PGF
Assuming All VOC Emissions Form Secondary Aerosols

	Maximum Extinction Attributable to PGF (1/Mm)	Maximum Change in Extinction (%)	Number of Days With Significant Change in Extinction
Spring	0.121	0.43	0
Summer	0.138	0.54	1
Fall	0.394	1.30	10
Winter	0.535	2.32	6
Max/Total	0.535	2.32	17

Several conservative assumptions contribute to this result:

- All VOCs are instantly converted to secondary organic aerosols
- Visibility in the CRGNSA is degraded by existing sources more that 10 percent for every day of the year
- Background aerosol concentrations in the CRGNSA represent excellent visual conditions for the calculation of the background scattering coefficient (approximately the 90th percentile best visibility)
- No weather phenomena (such as fog) are present that obscure the affects of the predicted change to the extinction coefficient
- The predicted extinction coefficient is applicable to the entire visual path length from observer to target
- Good visibility in the CRGNSA is equally important for all days and hours of the years
- The PGF emits at its maximum permitted emission rates for all hours of the year

This series of conservative assumptions result in exaggerated indication of potential regional haze impacts in the CRGNSA.

RESPONSE TO COMMENT A-7

The commentor disagrees with the notation in Table 3.14-2 in the Draft EIS (Potential Cumulative Impacts) that states in part that cumulative impacts would be unlikely. Table 3.14-2 summarizes the findings of an evaluation of the potential for other projects to impose cumulative impacts in the PGF project area, and the potential for the PGF and other projects to cumulatively affect locations throughout the regional area. This evaluation resulted in the conclusion that the approximately 70 miles separating the PGF and Goldendale, the volume of emissions (both plants are approximately the same size and technology) and the diffusion of the stack plume over the distance would make it unlikely that criteria pollutants would concentrate and cause cumulative impacts.

Acid deposition, sulfur and nitrate deposition are the cause of the ecosystem disturbance and cultural resource concerns. The periods deposition rates are at a maximum are those days the author in this paragraph is dismissing as unimportant for regional haze. The air quality models used for regional haze do a very poor job of estimating deposition rates. Fine particulate formation occurs rapidly under the circumstances described by the author – on the days such as this when the clouds dissipate in late morning (a very common occurrence) some of the worst visibility or haze conditions that are recorded occur in the afternoon. It is for these reasons that attempts to rationalize these impacts as unimportant are not justified.

A-9

A-10

Further modeling analysis of the PGF using CALPUFF indicated that PGF emissions, when transported to the Goldendale area, would be *de minimus*. If the PGF air quality impacts were *de minimus* at Goldendale, which lies north of the Columbia Gorge, cumulative impacts would not likely occur further to the east and south in the Gorge based on the relative location of the PGF.

RESPONSE TO COMMENT A-8

See Response to Comment A-2.

RESPONSE TO COMMENT A-9

The air quality models used in the Draft EIS to analyze regional haze are those recommended by Federal Land Managers (FLMs) (including those from the USFS) in the FLAG2 guidance document for assessing acid deposition to Class I areas. The FLMs consider these models to be the best tools available for assessing deposition rates. As in any modeling analysis or measurement program, some uncertainty exists in the estimation of deposition rates. In order to address this uncertainty, the FLAG2 modeling techniques and the USFS-recommended criteria for deposition include a degree of conservatism. Using the FLAG2 procedures, predicted deposition rates in the CRGNSA are tiny fractions of existing deposition rates and of the USFS-recommended criteria (see Table A-2-1). Such small incremental increases in the deposition of sulfur or nitrogen are not likely to significantly affect resources within the CRGNSA. See also Response to Comment A-2.

RESPONSE TO COMMENT A-10

The Draft EIS's regional haze assessment follows protocols developed by the FLMs and uses the FLAG criteria they have established. The assessment uses a year's worth of meteorological data (relative humidity, wind direction and speed, etc.), which includes data from days in which clouds dissipate during the late morning. Although these meteorological conditions are taken into account in predicting the potential effect of PGF emissions on extinction coefficient, the analysis conservatively

assumes that the background visibility is excellent during all hours of the day and night and during all weather conditions. In other words, the assessment overstates the project's potential effect by assuming that a 5 percent change in extinction coefficient would result in a perceptible degradation of visibility, even if that change occurred at night or when clouds obscure scenic vistas.

Potential cumulative air quality impacts, including potential visibility degradation, are discussed in Section 3.2.3 of the Draft EIS and in Appendix B of the Draft EIS. This discussion focuses on the potential cumulative effect of the proposed project in combination with other potential power plants that could be developed in the region because the combined effect of power plant emissions has been identified as a primary area of concern by the public. In addition, the regional air quality modeling performed by BPA that is discussed in the Draft EIS was performed independently of the Draft EIS process for any particular potential power plant, and was intended to focus on the cumulative impacts of the potential plants rather than other sources.

As discussed on page 3.2-19 of the Draft EIS, the cumulative modeling done for the potential power plant likely significantly overestimates visibility impacts. Nonetheless, the cumulative effect of these plants would be potentially significant only one day per year.

Air emissions from other, non-power plant sources could also contribute to visibility degradation at the CRGNSA and Mount Hood. While emissions from other sources (both past and existing) were included in the background for cumulative air quality modeling and thus are sufficiently accounted for, potential contributions from future non-power plant sources were not included in the modeling. The following has been added as the second-to-last sentence of the last paragraph on page 3.2-19 of the Draft EIS:

> *"In addition to potential power plants, there are several other future sources in the region that could generate air emission and contribute to visibility degradation at the CRGNSA and Mount Hood if developed. For a list of these potential non-power plant sources of air emissions, please see Table 3.14-1. These sources may add to the projected cumulative impact of the potential power plants in the region."*

BPA and Benton County believe that the Draft EIS provides sufficient information concerning potential cumulative impacts in adequate detail to allow decision-makers and the public to understand these potential impacts, and that the analysis of these potential impacts conforms to the requirements of applicable NEPA regulations.

United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
500 NE Multnomah Street, Suite 356
Portland, Oregon 97232-2036

IN REPLY REFER TO:

October 21, 2002

ER 02/875

Philip W. Smith
Bonneville Power Administration
P.O. Box 3621 KEC-4
905 NE 11th
Portland, Oregon 92708-3621

Dear Mr. Smith:

The Department of the Interior has reviewed the Draft Environmental Impact Statement (DEIS) for the Plymouth Generating Facility, Benton County, Washington. The Department does not have any comments to offer. A-11

We appreciated the opportunity to comment.

Sincerely,

Preston A. Sleeger
Regional Environmental Officer

RESPONSE TO COMMENT A-11

Comment acknowledged.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

Printed on Recycled Paper

October 15, 2002

Reply To
Attn Of: ECO-088

Ref: 02-003-BPA

Philip Smith
Bonneville Power Administration
P.O. Box 3621 (KEC-4)
Portland, OR 97208-2631

Dear Mr. Smith:

The Environmental Protection Agency (EPA) has completed its review of the draft Environmental Impact Statement (EIS) for the proposed **Plymouth Generating Facility** (CEQ No. 020365) in accordance with our authorities and responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act. The draft EIS has been prepared to respond to a proposal to construct and operate a natural gas-fired power plant in Benton County, Washington and to distribute the generated power over the Federal Columbia River Transmission System. The EIS evaluates the applicant's proposed power plant and two transmission line alignments along with the No Action alternative. An agency-preferred alternative is not identified.

Based on our review and evaluation, we have assigned a rating of EC-2 (Environmental Concerns - Insufficient Information) to the draft EIS. This rating, and a summary of our comments, will be published in the *Federal Register*. A copy of the rating system used in conducting our review is enclosed for your reference.

Our concerns with the proposed project relate to its predicted contribution to cumulative visibility degradation in the Columbia River Gorge National Scenic Area (CRGNSA) and at Mount Hood. While the EIS indicates that project-specific air emissions alone would not cause perceptible visibility impacts in the CRGNSA (or national parks and wilderness areas in the region), modeling analyses reveal that combined emissions from fifteen (15) proposed gas-fired power plants (including the Plymouth Generation Facility) would result in significant visibility effects in the CRGNSA and at Mount Hood. We note that the modeling conducted does not reflect contributions from existing or reasonably foreseeable new (non-power generating) air sources. As a result, we are concerned that the overall cumulative visibility effects would likely

A-12

RESPONSE TO COMMENT A-12

As described in Response to Comments A-1 and A-10 above, a comprehensive analysis of cumulative effects on visibility in the CRGNSA was performed. The analysis performed is consistent with the requirements of 40 C.F.R. 1502.16, and the Council of Environmental Quality document *Considering Cumulative Effects*.

The comment correctly acknowledges that the modeling analysis demonstrates that the PGF would not cause perceptible visibility impacts in the CRGNSA. However, the comment is incorrect in stating that the modeling revealed that the cumulative effect of emissions 15 proposed gas-fired plans would be a significant adverse change in visibility. As explained in response to Comment A-1 above, the modeling indicated that visibility in the CRGNSA would be affected, at most, 7 days a year. As explained, however, the conservative nature of the modeling significantly overstates the likely effect. The impacts predicted by this analysis are also overstated as a result of subsequent events indicating that several of the potential future sources considered in the modeling analysis are no longer appear reasonably likely to be constructed.

The comment also criticizes the EIS for not including all existing sources of air emissions in the modeling. This comment misunderstands the purpose of the modeling. It is acknowledged that there are currently some days in which visibility is impaired in the CRGNSA. Those existing conditions are common to the project and no-action alternatives. The modeling was designed to indicate to what extent the PGF and other reasonably likely future sources would create further visibility impairment. Rather than include all existing emission sources in the modeling, the analysis conservatively assumed excellent visibility occurred every day of the year (as if existing sources never affect visibility), and then determined the effect of the potential future sources. This method of analysis overstates the cumulative effect of future sources because the visibility may already be impaired (due either to natural meterological conditions or to existing emissions sources) on the day or days in which the modeling shows an impact. In the agency's judgment, this is best way to evaluate potential cumulative impacts.

be more significant than reported because the analyses conducted to date do not reflect a complete cumulative effects assessment reflecting the contributions of all past, present and reasonably foreseeable sources. We recommend that the EIS be revised to include a comprehensive cumulative air quality analysis that is consistent with the implementing regulations for NEPA (see 40 CFR 1502.16). We also recommend consulting *Considering Cumulative Effects* Environmental Quality in 1997 in furthering the development of the cumulative effects analysis for this EIS.

A-12 (cont.)

Thank you for the opportunity to provide comments on the draft EIS. I urge you to contact Bill Ryan of my staff at (206) 553-8561 at your earliest opportunity to discuss our comments and how they might best be addressed in the EIS.

Sincerely,

/s/

Judith Leckrone Lee, Manager
Geographic Unit

Enclosure

cc: Mike Shuttleworth, Benton County Planning

The comment also criticized the EIS for not including all potential future non-power generating sources in the modeling. It would be too costly and time-consuming to include every possible emission source in the model. BPA, therefore, made a reasonable decision to focus on proposed power projects that would result in significant emission in the area. The comment does not identify any particular non-power source that should have been included in the modeling, or explain why any such source would be so significant that it would result in a material difference in the results of the analysis.

U.S. Environmental Protection Agency Rating System for Draft Environmental Impact Statements Definitions and Follow-Up Action*

Environmental Impact of the Action

LO - - Lack of Objections

The Environmental Protection Agency (EPA) review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC - - Environmental Concerns

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce these impacts.

EO - - Environmental Objections

The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no-action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU - - Environmentally Unsatisfactory

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

Adequacy of the Impact Statement

Category 1 - - Adequate

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis of data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2 - - Insufficient Information

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses or discussion should be included in the final EIS.

Category 3 - - Inadequate

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the National Environmental Policy Act and or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

* From EPA Manual 1640 Policy and Procedures for the Review of Federal Actions Impacting the Environment. February, 1987.

CONFEDERATED TRIBES
of the
Umatilla Indian Reservation
Department of Natural Resources
CULTURAL RESOURCES PROTECTION PROGRAM
P.O. Box 638
73239 Confederated Way
Pendleton, Oregon 97801
Area code 541 Phone 276-3629 FAX 276-1966

October 3, 2002

Philip W. Smith
Environmental Project Manager
Bonneville Power Administration
Post Office Box 3621
Portland, Oregon 97208-3621

Dear Mr. Smith:

The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) Cultural Resources Protection Program (CRPP) thanks you for the opportunity to review the draft environmental impact statement for the Plymouth Generating Facility. We have serious problems with this report.

On page 3.10-2 URS states, "A literature review and records search was completed for the site area at the Washington State Office of Archaeology and Historic Preservation in Olympia, Washington, on December 13, 2001. The record search included review of ethnographic and historic literature and maps; federal, state, and local inventories of historic properties; archaeological base maps and site records; and survey reports. The record search revealed that no archaeological sites have been identified within the site area. It also indicated, however, that no archaeological survey has been reported in the vicinity of the site area. Informal reports note the presence of prehistoric materials on the island in the Columbia River offshore of the community of Plymouth, well outside of the plant site, but these have not been confirmed."

It is hard to know where to start to respond to this paragraph; it contains many false statements. A hasty review of our records indicates there are approximately 17 cultural resource sites within one mile of the proposed plant site alone. This does not even consider the plant's associated infrastructure. These 17 sites do not include the 11 or 12 (depending on whether one includes Little Plymouth Island) cultural resource sites recorded on "the island in the Columbia River offshore of the community of Plymouth." In addition, at least 10 different cultural resource reports consider the sites on Plymouth Island; many of them have been test excavated. I do not know what URS means by "confirmed" sites, but we consider a site to exist when the Washington Office of Archaeology and Historic Preservation (OAHP) has assigned a site number to it. A-13

It is our sincere hope that URS mistakenly did not report these sites, although it is beyond our comprehension how such an oversight could take place. These sites are clearly indicated on OAHP maps. Such an error could have led to disturbance in this area with no further cultural resource work. The CRPP believes that subsurface testing of the project area and appropriate associated infrastructure are required in this area because there is such a high density of cultural resources. A-14

RESPONSE TO COMMENT A-13

Comment noted. The referenced paragraph has been revised to include information about the cultural resource sites identified by the commentor. (See Chapter II of this FEIS.)

RESPONSE TO COMMENT A-14

BPA and Benton County believe that sufficient investigative fieldwork to identify potential cultural resources has been conducted at this time. Although development of the proposed project would not be expected to affect known cultural resources, potential impacts to undiscovered cultural resources is acknowledged, and appropriate mitigation is provided. As stated in Section 3.10.3, Summary of Impacts, and 3.10.4, Mitigation Measures, of the EIS,

> *"…if recorded archaeological resources present within the Alternate Transmission Interconnection corridor are determined significant and will be impacted, or if previously unidentified archaeological materials or features were to be discovered during construction or ground-disturbing activities and the discovery were to be determined significant, mitigation will be necessary. The Washington State Office of Archaeological and Historic Preservation would determine appropriate mitigation."*

Finally, page 3.10-5 contains the statement, "The Plateau was characterized by Kroeber (1939) as a region of 'absences and low intensity culture,' particularly when compared to the more highly developed cultures represented on the Northwest Coast and Plains." The CTUIR strongly resents the implication that it has a less than fully developed culture. A-15

We look forward to reviewing the cultural resource survey report and anticipate hearing from the BPA regarding a subsurface cultural resource testing project.

Respectfully,

Jeff Van Pelt
Program Manager

cc: Johnson Meninick, Yakama Nation
Bill White, Yakama Nation
Scott Williams, Assistant State Archaeologist, BPA Liaison
Valerie Hauser, Advisory Council on Historic Preservation
Stephen Tromly, Bonneville Power Administration

RESPONSE TO COMMENT A-15

The implication noted in the comment was not intended. The statement to which the commentor refers has been revised. (See Chapter II of this FEIS.)

CONFEDERATED TRIBES
of the
Umatilla Indian Reservation
Department of Natural Resources
CULTURAL RESOURCES
PROTECTION PROGRAM
P.O. Box 638
73239 Confederated Way
Pendleton, Oregon 97801
Area code 541 Phone 276-3629 FAX 276-1966

November 18, 2002

Philip W. Smith
Environmental Project Manager
Bonneville Power Administration
Post Office Box 3621
Portland, Oregon 97208-3621

Dear Mr. Smith:

The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) Cultural Resources Protection Program (CRPP) thanks you for the opportunity to review Michael S. Kelly of URS' *Cultural Resources Inventory of the Proposed Plymouth Generating Facility, Benton County, Washington*. We appreciate the changes that URS made in response to our comments regarding the draft environmental impact statement. However, we still have some problems with the report.

On page 19 Kelly lists previously identified sites in the project vicinity. We find that this list lacks site 45BN345. Site 45BN345 was recorded by David Ellis working for the U.S. Army Corps of Engineers, Portland District, in September 1983. It is the Spokane, Portland, and Seattle railroad grade, near Christy Road. That same list of sites on page 19 indicates the distance from the site to "project alternative." I found this portion of the table somewhat misleading. For example, site 45BN295 is listed as 1800 meters from the project alternative, but according to my maps it is right next to the Access Alternative. A-16

Kelly does not provide a map showing where URS surveyed. There is a description and an aerial photograph, but a map would be easier to follow. A few reports should have been referred to as part of this project. I am assuming that the McNary-John Day transmission line survey passed near the project area, especially the transmission interconnection. Heritage Research Associates, Inc. (HRA) prepared *Results of a Cultural Resources Assessment for the Northwest Pipeline Corporation Expansion I Project Washington Facilities* in 1994. A review of the site forms in Volume II of this document indicates that HRA undertook some subsurface testing at 45BN285 and that the 420 acre Port of Benton tract, which seems to be within the Plymouth Generating Facility project area, was formally determined eligible for inclusion in the National Register of Historic Places on June 19, 1981. In addition, there is no mention of Gordon Lothson and Glen Lindemans's 1980 *Cultural Resource Reconnaissance and Phase II Testing for the Port of Benton, Near Plymouth, Washington* report. I believe that to better understand the cultural resources of the area, these reports must be reviewed and, based on them, perhaps an informed decision about the likelihood of finding subsurface cultural resources in the plant area could be made. Until a reasoned argument regarding the relationship of the portions of the project area that are at a distance from the Columbia River to the sites along the river is made, we believe that subsurface testing in at least the plant area will be required. A-17 A-18 A-19

RESPONSE TO COMMENT A-16

The record of site 45BN345 has been added to the cultural resources inventory for this project. See Chapter II of this Final EIS. Specifically, the distance from Site 45BN295 to the project alternative has been corrected to 180 feet, not 1,800 feet.

RESPONSE TO COMMENT A-17

A map of sites is included with the revised Cultural Resources Report for the PGF, which was submitted to the Confederated Tribes of the Umatilla Indian Reservation in January 2003.

RESPONSE TO COMMENT A-18

These two reports have been consulted. See Chapter II of this Final EIS.

RESPONSE TO COMMENT A-19

Although no prehistoric archaeological materials were noted during inventory of project areas, the ground surface across much of the area investigated is highly disturbed and may have masked the presence of archaeological materials. Therefore, this area should be considered sensitive and may contain unidentified archaeological sites. Following identification of selected alternatives, additional archaeological investigation is recommended. Specifically, probing to test for buried deposits, prior to the initiation of construction, as well as monitoring during construction, are recommended. Archaeological materials identified during probing activities should be subject to additional testing and evaluation, followed by mitigation, if appropriate. See Chapter II of this FEIS for further information.

I understand that the BPA did not prepare this report. However, it took a considerable amount of my time to review the report and identify its deficiencies. Because this area is important to the tribe, we undertook this work; however, I hope that in the future your contractors will be more thorough.

Respectfully,

Catherine E. Dickson
Principal Investigator

cc: Jeff Van Pelt, CRPP Manager
Johnson Meninick, Yakama Nation
Bill White, Yakama Nation
Scott Williams, Assistant State Archaeologist, BPA Liaison
Valerie Hauser, Advisory Council on Historic Preservation
Stephen Tromly, Bonneville Power Administration

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
15 West Yakima Avenue, Suite 200 • Yakima, Washington 98902-3452 • (509) 575-2490

October 14, 2002

RECEIVED
OCT 15 2002
BENTON COUNTY
PLANNING DEPARTMENT

Terry Marden
Benton County Planning
PO Box 910
Prosser, WA 99350-0910

Dear Mr. Marden:

Thank you for the opportunity to comment on the Plymouth Generating Facility draft environmental impact statement (DEIS). We have reviewed the document and have the following comments.

Water Quality

The salts concentrated in the cooling loop will require a State of Washington Wastewater Discharge Permit and monitoring of the irrigated farmland will be necessary to ensure compliance with Washington State ground water standards. A wastewater discharge permit application can be obtained and returned to the Central Regional Office of the Dept. of Ecology. Please contact Cindy Huwe at (509) 457-7105 for the permit application.

If you have any questions concerning the Water Quality comments, please contact Pat Irle at (509) 454-7864.

Sincerely,

Gwen Clear

Gwen Clear
Environmental Review Coordinator
Central Regional Office
(509) 575-2012

818

A-20

RESPONSE TO COMMENT A-20

Comment acknowledged. Please note that the requirement for this permit is listed in Table 5-1 Plymouth Energy Project Permits and Approvals of this Final EIS.

Washington State
Department of Transportation
Douglas B. MacDonald
Secretary of Transportation

South Central Region
2809 Rudkin Road, Union Gap
P.O. Box 12560
Yakima, WA 98909-2560

509-577-1600
TTY: 1-800-833-6388
www.wsdot.wa.gov

October 17, 2002

Benton County Planning/Building Department
P. O. Box 910
Prosser, WA 99350-0910

Attention: Michael Shuttleworth, Senior Planner

Subject: CUP 01-45, Plymouth Energy, LLC; 306 MW Generation Facility
Draft Environmental Impact Statement (DEIS) Comments
SR 14, MP 173.88 – 179.96 (Christy Road to Plymouth Road) Right

We have reviewed the referenced Draft Environmental Impact Statement (DEIS), and have the following comments.

1. The project is not adjacent to any state-maintained rights-of-way, but State Highway 14 is in the project vicinity. The applicant identified SR 14 as providing indirect access to the site for both construction and operation of the proposed facility. SR 14 is a partially-controlled limited access facility. The Washington State Department of Transportation (WSDOT) has acquired all the access rights to the highway with the exception of deeded approaches.

   Access to SR 14 from the site is proposed via Plymouth Industrial Road. The SR 14/Plymouth Industrial Road intersection (mp 178.90) is unchannelized, and the posted speed limit is 65 miles per hour. Alternative access to the site would connect to SR 14 via Christy Road or Plymouth Road. The SR 14/Christy Road intersection (mp 173.88) is also unchannelized, and the posted speed limit is 65 miles per hour. The SR 14/Plymouth Road intersection (mp 179.96) is likewise unchannelized, and the posted speed limit is 55 miles per hour. Any of these proposed accesses are acceptable to us. No direct access to SR 14 from the site will be allowed. A-21

2. Doug Eldred, a WSDOT employee, is cited as a reference on pages 3.11-5 and 3.11-19. His last name is misspelled. A-22

3. It is the applicant's responsibility to keep and maintain SR 14 free of any debris or hazardous material. Any spilled material shall be cleaned up at the applicant's expense. A-23

4. All loads transported on WSDOT rights-of-way must be within the legal size and load limits, or have a valid oversize and/or overweight permit.

RESPONSE TO COMMENT A-21

Comment acknowledged.

RESPONSE TO COMMENT A-22

Comment acknowledged. This misspelling has been corrected in Chapter II of this Final EIS.

RESPONSE TO COMMENT A-23

Comment acknowledged.

5. For any traffic control needed on SR 14, the proponent must submit a traffic control plan to the WSDOT South Central Region Traffic Office for review and approval. Please contact Rick Gifford at (509) 577-1985 for specifics.

   Traffic control on SR 14 should be coordinated with our Area Maintenance Superintendent, Tom Root. He can be reached at (509) 577-1933 in Pasco.

6. Any outdoor advertising or motorist signing for this project will need to comply with state criteria. As above, please contact Rick Gifford at (509) 577-1985 for specifics.

7. The applicant has indicated they will promote rideshare and vanpool programs for construction workers during the seven-month construction period. WSDOT would like to encourage these efforts, and is willing to assist the applicant with their trip reduction plans. The applicant can contact the South Central Region's Commute Trip Reduction Coordinator, Jeff Sommerville, at (509) 577-1632 for assistance.

Thank you for the opportunity to review and comment on this proposed project. If you have any questions concerning our comments, please contact Rick Holmstrom at (509) 577-1633.

Sincerely,

W. Brian White, P.E.
Acting Regional Planning Engineer

WBW: rh/jjg

cc: File #5, Benton County
Tom Root, Area 3 Maintenance Superintendent
Rick Gifford, Traffic Engineer
Jeff Sommerville, Commute Trip Reduction Coordinator

p:\planning\devrev\sr14\ bentco_plymouth energy_deis.doc

A-23 (cont.)

A-24

RESPONSE TO COMMENT A-24

Comment acknowledged.

Ross B. Dunfee, P.E.
Public Works Director / County Engineer
Steven L. Tonks, P.E.
Asst. Director/Asst. County Engineer

Benton County
Department of Public Works

Post Office Box 1001 - Courthouse
Prosser, Washington 99350-0954

Area Code 509
Prosser 786-5611
Tri-Cities 736-3084
Ext. 5664
Fax 786-5627

September 13, 2002

Mr. Terry A. Marden, Director
Benton County Planning & Building Department
P.O. Box 910
Prosser, WA 99350

RE: Draft EIS Plymouth Generating Facility

Dear Mr. Marden:

1. New road for Plymouth generating facility – The applicant does not state whether this is to be a public or private road. If it is to be a road owned and maintained by Benton County, it must be constructed in accordance with our standards and requirements. A-25

2. Upgrading existing Plymouth Industrial Road – This is to be coordinated with Benton County in accordance with our standards and requirements. A-26

3. Section 3.1.1.5 Access Alternative: If Christy Road is chosen as the preferred route, Benton County Public Works is to be contacted. It may be that the existing Christy Road would need to be upgraded if this route is chosen. The maps show two locations for the proposed connection to Christy Road. The actual location is to be determined an approved by Benton County prior to any construction. A-27

.

If you have any questions, please contact this office.

Sincerely,

Steven W. Becken
Project Engineer

RECEIVED
SEP 12
BENTON COUNTY
PLANNING DEPARTMENT

"BENTON COUNTY PUBLIC WORKS DEPARTMENT IS A DRUG FREE WORKPLACE AND AN EQUAL OPPORTUNITY EMPLOYER"

RESPONSE TO COMMENT A-25

Plymouth Industrial Road would be a private road. As described in Section 2.2.7 of the Draft EIS, the exiting Plymouth Industrial Road is a private road except for the first 900 feet of the roadway that adjoins State Route 14. The portion of Plymouth Industrial Road that would be extended to the Plymouth Generating Facility would also be a private road and would intersect the existing Plymouth Industrial Road at a point where the existing road is currently private.

RESPONSE TO COMMENT A-26

Comment acknowledged.

RESPONSE TO COMMENT A-27

Comment acknowledged.

"Mike Shuttleworth" <mike_shuttleworth@co.benton.wa.us>
12/18/02 02:38 PM

To: <pwsmith@bpa.gov>, <Katie_McKinstry@urscorp.com>
cc:
Subject: Fwd: Request to become party in Plymouth Power permits

----- Message from "Gerald Steel" <geraldsteel@yahoo.com> on Wed, 18 Dec 2002 14:11:05 -0800 -----

To: <mike_shuttleworth@co.benton.wa.us>

Subject Request to become party in Plymouth Power
: permits

Michael,

I represent the Central Washington Building & Construction Trades Council in their concerns regarding the Plymouth Power project. I understand that you are the correct contact for the following request but I would appreciate it if you would confirm this understanding or provide me with information as to who is the correct contact. I request that my client become a party (with me as the contact person) regarding all permits to be issued by Benton County that are associated with the Plymouth Power project. I request that I be given notice of all hearings and/or opportunities to comment and copies of all decisions. I also request a copy of the DEIS (with appendices) and a copy of the FEIS (with appendices) when it becomes available. Could you email me a list of all of the Benton County permits related to the Plymouth Power project that have been applied for with some estimate of when each permit might be issued and when any hearings might be held? Also, could you give me a list of other agencies (with a person's name and phone where available) where you know that other permits related to the Plymouth Power project either are being processed or likely will be processed? If you prefer that I make this request in a mailed letter, please let me know. I thank you for your assistance.

Gerald Steel, PE
Attorney-at-Law
2545 NE 95th St.
Seattle, WA 98115
Tel/Fax 206.529.8373

G-1

RESPONSE TO COMMENT G-1

A copy of the Draft EIS was mailed to the commentor, and the commentor was added to the Distribution List for the Final EIS.
A list of required permits is provided in Section 4.0 of the Draft EIS and Chapter II of the Final EIS.

Pacific Northwest Regional Council of Carpenters
KIRK E. DEAL
253 627-5122 Fax 253 627-5121
412 S. 13th St., Tacoma, WA. 98402

December 12, 2002

Mr. Mike Shuttleworth
Benton County Planning &Building Department
1002 Dudley Avenue
Prosser, WA 99350

Dear Sir:

I am contacting you with regards to the proposed Plymouth Generation Facility. Please have the applicant address the attached comments in the final EIS.

You will recall that I visited the Prosser Planning Office on July 11 to request a copy of the Draft Environmental Impact Statement. At that time I requested notification for the hearing related to the review of the Draft EIS and left my address for that purpose.

As I never received notification of the hearing, I acquired the Draft EIS upon returning to the Planning Office to enquire about the meeting after the comment period had closed.

Respectfully,

Kirk E. Deal

Kirk E. Deal

RECEIVED
DEC
BENTON COUNTY
PLANNING DEPARTMENT

RECEIVED
BENTON COUNTY
PLANNING DEPARTMENT

G-2

RESPONSE TO COMMENT G-2

Comment acknowledged. The commentor has been added to the Distribution List for the Final EIS.

Benton County Planning/Building Department
PO Box 910
1002 Dudley Avenue
Prosser, WA 99350

Re: **Comments/Questions** pertaining to the *Draft EIS* for **Plymouth Generation Facility**

Questions referencing the Draft Environmental Impact Study, Section 3.13.2.2.1: Socioeconomics, Construction.

(1)What is the basis for the applicant's projection of using a 65% local labor work force? G-3

(2)Will the applicant use local hiring halls within the county to achieve these projections for skilled construction craftspeople? G-4

Comments:

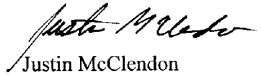
The DEIS projects that one third of the workforce will come from outside the area and used very general description of that employment resource: "weekly commuters".

A similar project in Hermiston recently hired one third of their workforce from outside of the three northwest states of Washington, Oregon and Idaho.

If these practices occur during the construction of a plant at Plymouth, wages will be exported outside the region at a time when this region is experiencing high unemployment.

Respectfully,

Kirk Deal
Pacific NW Regional Council of Carpenters
412 S. 13th St.
Tacoma, WA 98402



Justin McClendon
Pacific NW Reg. Council of Carpenters
2819 W Sylvester Ave
Pasco, WA 99302

RESPONSE TO COMMENT G-3

The DEIS states that approximately 65 percent of the construction worker positions would be filled from the local labor force (i.e., from Benton, Franklin and Umatilla counties). This percentage is based on prior experience of the Applicant on projects such as the actual construction of Sumas Energy 1 in Whatcom County (Martin 2002). The percentage applied to the PGF is likely conservative, because the PGF plant would be located closer to a large labor force (Tri-cities), compared to Sumas Energy 1. The local-worker percentage was assigned as 65 percent based on the following:

- labor availability within the local area (discussed in the DEIS and below) is adequate to meet demand by PGF construction;
- the assumption by the Applicant that a portion of the labor force would be highly specialized craftsmen who would originate from non-local areas; and
- the assumption by the Applicant that a portion of the labor would likely originate from outside the local area due to relatively longer commute times to which some construction workers are accustomed, due to the temporary nature of the work.

The Washington State Employment Security Department (WESD) indicates that in the two-county area of Benton and Franklin counties, almost 500 openings would exist on average per year between 3rd quarter 2001 and 3rd quarter 2003 in occupations that would be in demand by PGF construction. See Table G-3-1 below. Occupations in demand due to PGF construction are listed in Table 2-4 in the Draft EIS.

Table G-3-1
Two-Year Occupational Projections for
Benton-Franklin Workforce Development Area

Occupational Title	Employees 3rd Qtr 2001	Employees 3rd Qtr 2003	Avg. Annual Growth Rate	Avg. Annual Growth	Avg. Annual Total Openings
Construction managers	225	253	5.90%	14	17
Civil engineers	613	695	6.50%	41	50
Engineers, all other	282	296	2.60%	7	13
Civil engineering technicians	149	162	4.00%	6	9
Electrical and electronic engineering technicians	103	110	3.30%	3	5
First-line supervisors/managers of construction trades and extraction workers	826	921	5.60%	47	65
Carpenters	979	972	-0.40%	-4	11
Cement masons and concrete finishers	126	155	11.20%	15	16
Construction laborers	486	602	11.30%	58	62
Operating engineers and other construction equipment operators	259	427	28.40%	84	90
Painters, construction and maintenance	190	196	1.50%	3	6
Pipelayers	100	196	40.20%	48	50
Plumbers, pipefitters, and steamfitters	555	559	0.40%	2	10
Sheet metal workers	131	134	0.90%	1	4
Construction and building inspectors	120	135	6.10%	8	10
All other construction and related workers	61	62	0.70%	0	1
Laborers and freight, stock, and material movers, hand	1,597	1,622	0.80%	13	77
TOTAL Construction	**6802**	**7497**	**10.2%**	**346**	**496**

Source: WESD, 2002.

Long-term occupational projections by the WESD indicate that between the years 2000 and 2005, the average number of openings per year in the group of occupations listed in Table G-3-1 would total 461 (WESD, 2002). PGF construction would occur between third quarter 2003 and third quarter 2005, and would require an average of 130 workers. Judging from these more current and localized data, demand for PGF construction workers would predominately be met locally.

References:

Martin, Chuck, 2002. Email communication from Chuck Martin, Plymouth Energy, and Katie Carroz, URS Corporation. January 7, 2003.

Washington State Employment Security Department (WESD), 2002. Short-term and long-term Occupational Projections for WDAs. Occupational Projections for the Benton-Franklin Workforce Development Area, All Occupations. http://www.wa.gov/esd/lmea/occdata/2year/ benf2yr.htm. http://www.wa.gov/esd/lmea/labrmrkt/occ/occ11.htm

RESPONSE TO COMMENT G-4

Although the Applicant has not yet selected a prime contractor or entered into a construction contract, the Applicant anticipates a contracting arrangement that utilizes the local labor pool. In particular, the Applicant plans to draw from the Tri-cities' pool of skilled labor for construction labor requirements. The construction contract would be negotiated and finalized after permitting is completed and financial closing is imminent.

Benton County Planning Dept
1002 Dudley Ave
Prosser, WA 99350

Benton County Building Dept
5600 Canal Dr
Kennewick, WA 99336

Bonneville Power Admin
PO Box 3621
Portland, OR 97208

RE:
PLYMOUTH ENERGY WANTS to build a natural gas-power plant a couple miles west of Plymouth, northeast of an existing power plant.
Benton county planners have finished their environmental impact statement regarding the project. And, they want your comments on the plan. Copies of the DEIS available.

Response by:Elmer Eugene Ayers

I have lived in the area here since 1975 January and have worked mainly as a Pipefitter and welder for those years. As I see it we need many small units producing electricity for our farmers and businesses and support facilities of these businesses and for the bedrooms that house the workers in our area. We need electricity for many varied and quite a number of electronic items in our lives and it needs to be uninterrupted as we have been blessed with from our PUDs in the area. We need this addition to our supply available and to sell to California and other places as needed thus we serve the whole north west as well as this great country of ours.

If we have many small facilities then it is harder for our enemy to cut us off or be cut off because of natural disasters. Also they can have shut downs that effect a smaller part of our sources instead of one shut down for maintenance effecting a very great part of our sources. It also can effectively give a better competition between the competing companies of electric generation. This verses a single source and no competing companies as is Bonneville Power Administration.

The location is good for a varied number of reasons. It is Washington build and operated and can from that placement geographically easily serve on shorter lines to Hermiston area and south to Tri Cities area and beyond and to Walla Walla vicinity. Also it can promote the development of small industries to settle in the Plymouth area on the Washington side of the Columbia vs the

I-1

RESPONSE TO COMMENT I-1

Comment Acknowledged.

Oregon side. Benton county will reap good benefits for its farmers on their needs now and future for the electric pumps and other devices in this desert region needed to operate a large industry of farming and it is expanding all the time. This also serves the tourist and those coming here for conventions and other meetings as well as the sports activities that are continuing to expand all around us in our cities.

I-1
(cont.)

We need this in summary because it is the right thing to do.

We need this and where it is at because it fits as part of a bigger package of a lot of small units working in concert to meet our needs.

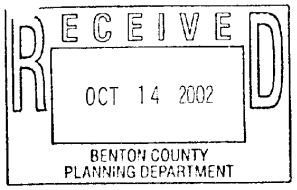
We need this because some one else will do it in Oregon and then we miss the tax base and control that we should have for our people.

We need this to add to the overall countries and NW needs for future power and varied sources in case of emergency whether natural or enemy caused or for maintenance purposes.

Thank you for listening to my opinion and I do hope this helps in your decision making process.

Elmer Eugene Ayers
907 w Park st
Pasco, Wa. 99301

October 10, 2002



My name is Linda Marcum and I am a resident of Plymouth, Wa.the proposed site for the new Plymouth Energy generating facility. After reviewing the DOE/EIS I have formulated some points of concern. I want to thank you in advance for taking the time to read my concerns.

All of the following concerns are expressed in order of my personal evaluations and prioritized from highest concern to least concern.

1) Air Quality

Section 3.2-11 states that there are no controls available to control emmissions of PM 10 or SO2 from combustion-turbine power plants. The release of nitrogen oxide, sulfur dioxide and particulate matter is of upper most importance to me. Having health problems related to breathing air, I feel that I need to be ASSURED that I will not be exposed to anything that may alter my way of life here in Plymouth, and my abilty to enjoy a clean air enviroment. This I do not feel is adequately addessed. In section 3.14-1 it is stated, that further development of the area in mention, especially in an industry such as power production, may produce air emissions that could potentially affect air quality. Along with this, we should consider air visibilty as it coincides with air quality. Regional haze in the model suggests that the proposed project could potentially degrade visibility. In the 24 hour extinction, relatively higher concentrations near the facility were caused by the PM10 emmited directly from the turbines. Also, secondary aerosols formed through the conversion of the NOx and SO2 are important components of the extinction. While air movement is a consideration and should be taken into fact finding, my understanding of this is limited and I would like further information. A thinking person would assume that the emissions of aersols and other components would not only directly affect the haze and viewing problem, but the air quality as well. While the air quality is in question it does not only affect the human population, but wildlife as well. I-2 I-3

2) The source of elevated nitrates was not addressed in the Ecology report. Why was that?? The use of fertilizers, and other possible hazardous materials that may affect drinking water is of importance to me. Listing possible sources is not good enough. This needs further research with the findings made public. I-4

RESPONSE TO COMMENT I-2

The discussion of emissions from the PGF acknowledges that the project would generate air pollutants, but the concentrations of air pollutants in the exhaust would be very low because combustion of natural gas is relatively clean and because Best Available Control Technology would be applied to minimize air pollution. The dispersion modeling analysis summarized in the Draft EIS indicates that predicted concentrations would be far below the ambient air quality standards that have been established to protect human health. Consequently, no adverse health effects attributable to air emissions from the PGF are expected.

RESPONSE TO COMMENT I-3

A regional visibility impact assessment was conducted for the Draft EIS, and the results of this assessment were included in Chapter 3.2 and Appendix B of the EIS. The assessment considered both directly emitted particulate matter and secondary aerosol formation. Results of the assessment indicated that PGF emissions would have a minimal impact on visibility. See also Responses to Comments A-1 and A-2.

The air quality modeling of emissions attributable to PGF revealed predicted concentrations that were comparable to or less than those deemed insignificant under EPA's PSD permitting procedures. Predicted concentrations were small fractions of the ambient air quality standards established to protect human health and welfare. Since air quality laws are designed to protect humans, consideration is given to at-risk populations and sub-lethal effects. It is reasonable to assume that protection of humans in this manner will also protect wildlife. There are no studies that indicate otherwise.

RESPONSE TO COMMENT I-4

As discussed in Section 3.3.1.1.2 of the Draft EIS, groundwater sampling revealed that existing nitrate levels in the groundwater near the plant site exceed drinking water standards. A report prepared by Ecology concluded that elevated nitrate concentrations are present in groundwater in many areas of the mid-Columbia River Basin, which includes Benton

3) Public Services and Utilities

On summary page 1-11 it states that impacts from the PGF would not be significant. A potentially significant cumulative impact on public services and utilities could occur because of additional daily or weekly population in the region ie: construction workers on other projects, thus placing a higher demand on servies such as law enforcement, fire protection and emergency services. It is very apparent to anyone that lives here in Plymouth, that police response times are dreadful and very lacking. As an unincorporated area, we are not high priority. The volunteer fire dept is very effective as just that. With additional construction occuring in the Tri Cities area, I strongly disagree that response times will not be affected, as they are poor now from the police especially. 3.12-1 states that one deputy patrols the Plymouth area 40 hours a week. With the influx of construction that is not enough. With response times lacking from the TriCites, it is likely that additional traffic accidents will occur and a rise in additional civil problems, citations, burglaries and other service calls would occur. More people more problems.

During construction it is stated on 3.12-7 that aprox. 222 additional workers would enter and leave the site area. This increase shows that our police coverage would be less that adeqate for the construction alone. The residents and their concerns would be overlooked with the added volume of people during construction. The DOE/EIS does not adequately address this problem. It states on one hand, that the impact will be minimal yet shows the opposite. Since the socioenomics impact on the citizens of Plymouth is not a consideration, additional law enforcement is highly unlikely and a concern for me as a citzen of Plymouth.

I-5

4) Transmission Lines

On 1-17, impact of the transmission interconnection, it is stated that the interconnection may necessitate some removal of crops within Plymouth Farm and agricultural property north of the farm. Plymouth Farms in the past has removed and burned on a windy day , acres of trees. Particilate matter was sent into the air effecting my breathing so much that I had to stay in the house with windows closed. At the very least a calmer day should have been chosen. I called the air quality authority to complain, and in usual fashion nothing was done. I would like to see Plymouth Farms and Plymouth Energy, be required to be more aware of the weather conditions and the feasibilty of another way to remove crops should that be necessary, that not only affect my way of life, but that of others around me, including wildlife.

It is also stated that property owners would be consulted when construction of transmission lines is about to begin. We all want the area to remain unchanged environmentally as well as aesthetically as much as possible.

I-6

County. Although the source of the elevated nitrate concentrations was not discussed in the Ecology report, increased nitrates are often attributable to agricultural use of fertilizer and discharges from septic systems.

Construction of the PGF would not affect the quality of groundwater, as stated in 3.3.2.2.1 of the Draft EIS. During PGF operation, the use of a septic system would create the potential for nitrate loading to the groundwater at the plant site. The nitrate concentration in the groundwater at the site would increase approximately 0.9 percent in the immediate vicinity of the drainfield, determined to be a low-to-moderate (less than significant) impact, as discussed in Section 3.3.2.2.2.

RESPONSE TO COMMENT I-5

Section 3.12 of the Draft EIS describes existing police, fire and emergency medical service (EMS) capability in the regional and site area. Emergency service responders expect an increase in traffic and other incidents due to the proposed project, but do not expect substantial increases in demand on their services because (1) no detours or road closures would occur during construction, so delays in responding to incidents are not expected, (2) the traffic level of service (LOS) would remain at its current level during project construction, so traffic delays and volumes would not differ substantially, and (3) the peak construction period would not occur during winter when the number of accidents typically increases due to poor driving conditions. Section 3.12.3 of the DEIS discusses the cumulative impacts on public services from projects in the vicinity. The influx of workers and overlapping construction periods would likely increase the need for public services.

RESPONSE TO COMMENT I-6

The comment includes reference to heavy dust episodes during past orchard removal at Plymouth Farms. Development of the PGF would not entail removal of additional orchards. It would require removal of surface vegetation and grading of the planned PGF project site. Vegetation removal and grading would include dust suppression methods such as watering to minimize and fugitive dust emissions. See discussion in Sections 2.2.8.2 and 2.2.8.3 of the Draft EIS.

5) Erosion

Wind erosion will be a big problem. Once construction has begun, wind currents will be inplay and soil (sand) will blow everywhere. 3. 1-28 states that once soil is distrubed, the most critcal time for erosion is from March to May, however I disagree with that assumption as it does state later in the paragraph. Erosion by storm water runoff would be greatest during the rainy season. In general, it states that impacts from erosion will be significant. I agree with this statement and hope that Plymouth Energy has a plan in place to manage and implement procedures as needed especially during construction. I would like to see some vegetation replanted to not only visually help the plant appear more " natural" while mimimizing the erosion process. I-7

In summary, all the concerns expressed above are mine alone. Keeping in mind the need for alternate energy sources, I am ambivalent about this project's contribution to that effort. It will surely not contribute added electrical use by the citzens of Plymouth, as the finished product will be sold and exported out of the area. The BPA has shown that it is greatly mismanaged with no plan in place to rectify the problems within it's own boundaries. Raising costs to cover ineptness does not solve the problems at hand. I do not see the need for a new generating plant at all, when the ones currently in place are so badly administered. NESCO dba Plymouth Energy has entered into an agreement with the BPA as well as others, to supply a finished product. The gain is theirs and has no advantage for the people of Plymouth, with the exception of new jobs. In researching NESCO's projects that have been completed, it appears that they try very hard to work with the local people and make every attempt to meet or exceed the DOE requirements. State perameters I feel are lacking but in the final analysis, the guidelines are set, and may not be conducive to the wishes of the population. I am hoping that this is the only plant of its kind in our area. Continued industrial development of this kind is great for Benton County, however not for the unincorporated town of Plymouth I feel. Continous monitoring of the progress on this facility and any future projects is the only way to assure that the quiet, pleasant way of life I seek is not disturbed for the advancement of outside monetary gains. I-8

Sincerely,

Linda Marcum

Linda Marcum

Plymouth, WA resident

RESPONSE TO COMMENT I-7

The project site is in a relatively arid area with annual rainfall on the order of 8 inches. In addition, soils at the project site and surrounding environs are sandy underlain by gravels that promote good drainage. Relatively little surface water runoff that could promote soil erosion is expected. The project grading plan will include surface water control features to control and channel runoff to a storm water pond for percolation (see Figure 2-4 and Section 3.3 in the Draft EIS).

RESPONSE TO COMMENT I-8

Comment acknowledged.

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October 14, 2002
by FAX to:
Benton County Planning
Michael Shuttleworth
509-786-5629

COMMENTS ON THE DEIS FOR THE PLYMOUTH POWER PROJECT

These comments are submitted on behalf of Washington State Association of Plumbers and pipefitters, and WE CARE (Workers for the Environment, Clean Air, Reliable Energy), and certain members of these groups, who live in and near Benton County, the proposed Plymouth Power plant and its related natural gas pipeline and transmission line.

EXECUTIVE SUMMARY

The BPA and Benton County issued a Draft Environmental Impact Statement (DEIS) for the project. The Commentors believe the DEIS is inadequate, and an revised draft environmental impact statement should be prepared instead. The Department of Ecology, Federal Energy Regulatory Commission, and other state and federal agencies should be cooperating parties in preparation of the revised DEIS. I-9

The BPA and Benton County's environmental review did not adequately consider cumulative air quality impacts. Many new power plants and industrial facilities have recently started up, are under construction or are seeking permits within about 150 miles of Plymouth Power. I-10

We think that an environmental impact statement (EIS) should comprehensively consider the cumulative impacts, especially air quality, from all of these plants, rather than piecemealing them one by one in separate reviews.[1]

The Commentors have identified several issues, including the failure to consider and describe all I-11

[1] Many of the nearby pending power plants are described in the Washington State Energy Facility Siting Evaluation Council (EFSEC) website, such as the permitted Wallula facility

RESPONSE TO COMMENT I-9

The lead agencies believe that the Draft EIS provided sufficient information so as to adequately inform the public about the proposed project and its potential impacts, as required under NEPA and SEPA. The Draft EIS provided meaningful analyses of all significant issues related to the proposed project, and comments submitted during the Draft EIS public review period have not resulted in significant changes to the Draft EIS (see Chapter II of this Final EIS for revisions made to the Draft EIS). Thus, circulation of a revised draft EIS is not necessary. Also see Response to Comment I-14.

RESPONSE TO COMMENT I-10

See Response to Comment A-1 and A-2.

RESPONSE TO COMMENT I-11

Cumulative impacts were considered for each discipline and in Section 3.14 of the Draft EIS. Alternative sites and designs for the PGF plant were considered and are discussed in Section 1.5.3 of the Draft EIS. Global warming is discussed in Response to Comment I-35. Plant and pipeline accidents are discussed in Responses to Comments I-25 and I-26, and toxic air emissions are discussed in Responses to Comments A-1 and A-2, as well as in Section 3.2, Air Quality, of the Draft EIS. Water use and farmland are discussed in Sections 3.3, Water, and Section 3.8 of the Draft EIS.

of the project's direct, indirect, and cumulative impacts, and the failure to consider the environmental advantages of alternative sites and designs for the power plant.

The DEIS dealt inadequately with global warming, power plant and pipeline accidents, toxic air emissions, water use, and losses of farm lands.

Project alternatives that were not adequately considered, include redesign to produce less air pollution, reconfiguration to reduce water use, and reduction of the amounts of surface disturbance caused by development of the plant site, and the pipeline and transmission line.

I-11 (cont.)

TEXT OF DISCUSSION
PURPOSE AND NEED

I-12

The DEIS misleads the reviewer with an inaccurate purpose and need statement and its outdated summary of the energy supplies in the Northwest. The DEIS says the WECC predicted increased electrical demand in an undated document, presumably before 1999, and claims that the NPPC, in 2000, claimed there could be black-outs in the Northwest ("generation insufficiency events") without 3000 more MWs of energy on line by 2003.

After citing these two or three year old studies, the DEIS then claims that "...consumers in the Pacific Northwest ... need increased power generation..."

If this claims was ever true, it rings hallow today. The facts are that the WECC's more current data shows that the Northwest's generating capacity is already predicted to increase by 3100 MW by 2003 to over 81,000 MW, compared to the needed reserves of only 65,600 MW, and that energy demand actually fell from 8-11% from 2000 to 2001. (WECC, 2002 Information Summary).

As for the NPPC, it now predicts that the needed 3100 MW will be added by December, 2002, in its Power Supply Outlook, May, 2001-April, 2002.

We know of over 2000 megawatts recently added to the Northwest grid: Hermiston Power Partners, Rathdrum Generation, Klamath Falls Cogen, the Hanaford turbine, and Frederickson II, along with upgrades at Puget Sound Energy/Fredonia, and smaller turbines added at Willamette Industries and elsewhere.

There are also at least another 2000 megawatts under construction; Goldendale Energy, Miriant Mint Farm, Satsop I, Chehalis Power, and Coyote Springs II, along with another 3500 Mw that are virtually or actually fully permitted and/or are declining to start construction; Garnet Energy, PGE/Tacoma, Tahoma Energy, Umatilla Generating, Wallula, Sumas II, The Cliffs, Garnet Energy, and Everett I & II.

In other words, even if there was a 3000 Mw shortfall predicted three years ago, that gap has been more than filled. In fact there is now a glut of natural gas fired energy. There is no

RESPONSE TO COMMENT I-12

The need for the proposed action is discussed on pages 1-1 to 1-2 of the Draft EIS and in Chapter I of this Final EIS. While some regional power need projections may have been updated in recent months, BPA reasonably believes that there is still a need for increased long-term power production in the region. For example, BPA's latest energy projections forecast that the Pacific Northwest region faces a firm energy deficit of approximately 7,125 average megawatts (aMW) by 2011 if no new resources are developed. *Pacific Northwest Loads and Resources Study* ("White Book"), BPA 2002. In addition, the WECC 10-year Coordinated Plan Summary for 2002-2011 (WECC 2002) mentioned by the commentor assumes a certain amount of regional power growth from projects such as the proposed action. The WECC also notes that several factors combine to make forecasting generation adequacy for the Northwest Power Pool Area difficult for this time period. These factors include the variable and uncertain reduction of hydropower production from implementation of the 2000 Biological Opinion and the constantly fluctuating number of non-hydro generation interconnection requests (and corresponding power generation capacity) received by BPA. Northwest Power Planning Council (NPPC) projections are similar to WECC projections in that they assume certain projects, such as the proposed action, will be built to reduce the long-term need for power in the region; without the construction of these projects, the accuracy of these projections is likely less valid.

Thus, the projected adequacy of generation supply in the Northwest over the next 10 years still is directly dependent on how many of the numerous projects assumed to be built under these projections, such as the Plymouth Generating Facility, are actually built. While some new generation plants have been built, many others that were expected to be built (and included in WECC and NECC projections as assumed to have been built) have recently been cancelled or put on hold due to current market conditions and the slowing economy. In addition, BPA must make decisions based on long-term projections. In the Pacific Northwest, the overall, long-term trend is one of growth, which is expected to

evidence that the market can support another facility. The Mint Farm and Satsop I plants have had their construction recently terminated when the plants are more than half built, and Goldendale Energy has now delayed completion of their plant for another year.

Another dozen plants have recently withdrawn or delayed their proposals, such as Mercer Ranch, Turner Energy, Grizzly, North Idaho Power, Kootenai Power, Morrow Generating, Coburg Energy,

In other words, the Purpose and Need Statement for the DEIS is outdated and inaccurate. Proceeding to permitting of this plant runs the risk of committing and squandering public agency staff and the public's time, and natural resources, land uses, and investment capital, for a power plant that is not needed in the foreseeable future.

I-12 (cont.)

In this light, it is likely that the developer does not actually seek to build a power plant, especially since the DEIS does not disclose the actual existence of a real power sales contract. Instead, it is more likely that the developer is merely seeking completed environmental permits, which will then be sold in the future to another developer, when balance is restored in the power market. We object to the misuse of staff time by the public agencies, and by the public, who must carefully review this project to insure that unnecessary environmental degradation does not occur. Staff time and the public's time should be reserved for "real" projects, not hypothetical projects that have an unlikely prospect of coming to fruition.

I-13

These recent facts also mean that the conclusion on page 2-1, that the No Project alternative would "not remove the need for power production" but would merely move the need to another site, is also inaccurate. The power plant construction boom of the last two years has already removed the need for power production, no matter if the No project alternative is selected.

I-14

AGENCY COOPERATION URGED

Several other local and federal agency approvals may be needed for this project, including the Federal Energy Regulation Commission, and the Department of Ecology. These entities should participate as cooperating agencies in a joint NEPA/SEPA EIS, rather than having the BPA and Benton County go it alone with a truncated DEIS. This type of agency cooperation is a cornerstone of efficient environmental review.

I-15

For instance, NEPA urges federal agencies to seek a cooperative posture with state agencies, in its section titled Elimination of duplication with State and local authorities (40 CFR 1506.2 (b):

> " (Federal) Agencies will cooperate with State and local agencies to the fullest extent possible to avoid duplication between NEPA and State and local requirements."

A joint NEPA/SEPA document could study all of the power plants and large industrial projects that are proposed along the Columbia River, which are in fact directly and indirectly the result of BPA's policies and concentrations of resources, and could study these cumulative impacts, and

I-16

Page 3 of 20

P.03

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continue into the foreseeable future. Basing decisions on short-term slow growth periods does not correspond appropriately to the more frequently occurring periods when the regional economy is growing and the demand for electricity increases. Therefore, BPA does not believe it would be wise to rely on the present slow down in the economy as a significant factor in fully assessing future demand. Because long-term forecasts still show a projected need for additional power in the region, BPA believes that there is sufficient need for the proposed action. The discussion of the need for the proposed action has been revised to reflect more current projections (see Chapter I of this Final EIS).

Reference:

Western Electricity Coordinating Council (WECC). 2002. 10-Year Coordinated Plan Summary, 2002-2011: Planning and Operation for Electric System Reliability. Salt Lake City, Utah. September.

RESPONSE TO COMMENT I-13

The lead agencies have an obligation to consider applications submitted for projects such as the proposed action, and the preparation of the Draft EIS reflects this consideration. A project must go through regulatory and environmental review before the responsible agencies can grant approval to a proposed project. Project developers are often unable to enter into power sales contracts until after permits authorizing construction of the facility are obtained. The regulatory process determines if a project, such as PGF, meets the requirements for construction and operation. It is not the purpose or the intent of regulatory review to determine if a project proponent will build the project. Many different factors, including market conditions, influence whether a project will be completed.

RESPONSE TO COMMENT I-14

Please see Response to Comment I-11.

appropriate mitigation measures, in a single comprehensive document. This type of review would provide a more useful analysis of these impacts and meaningful mitigation measures.

This approach could advance a unified mitigation approach to air quality impacts, as suggested by the Federal Land Management agencies in their comments on the Wallula EIS. Impacts should be required where practicable and feasible, as mandated by the courts and CEQ regulations.

The four and one half page discussion of cumulative impacts at Section 3.14 does not do justice to the existing and impending cumulative impacts, and does not even list all likely significant projects, neglecting to even list the Umatilla Depot incinerator, the Pacific Rim Ethanol plant, the Cliffs power plant at the Goldendale Smelter, and the expansion of the Boise/Wallula pulp and paper mill, among other developments.

CUMULATIVE IMPACTS

This is one of several power and large industrial projects already operating, being proposed, constructed, or which recently began operation within a 100 mile radius of the proposed site, in the Columbia River valley, and Gorge vicinity. These include several natural gas fired plants, and of the Boardman coal fired plant. There will be cumulative air quality impacts, especially from added oxides of nitrogen (NOX) emissions. About 2000 ton/year of NOX, and about another 2000 tons/year of other pollutants, will soon be added to this local air shed from these proposed or recently constructed facilities. This area's air quality is already degraded, according to the Federal Land Managers IMPROVE air monitoring program.

The DEIS acknowledged this significant cumulative impact at 3.2-19 from the new generation of power plants in eastern Oregon and Washington. However, this analysis did not cite previous certifications from the Federal Land Managers that air quality in this vicinity was already significantly degraded.

The coal fired power plant less than 100 miles away, which is permitted to emit over 17,000 Tons/year of NOX emissions, along with other nearby existing NOX sources such as compressor stations, and pulp and lumber mills, and chemical plants, were apparently not included in the DEIS cumulative air quality impact analysis. Nor did the charts in Appendix B even include all likely proposed power plants, and other proposed large sources of NOx and other air pollutants in the vicinity.[2]

CUMULATIVE AIR QUALITY IMPACTS

[2]The proponent of the Starbuck plant was misidentified at Pacific Power; it is Pennsylvania Power.

I-16 (cont.)

I-17

I-18

I-19

RESPONSE TO COMMENT I-15

BPA is undertaking the environmental review of the Proposed Action as the lead agency under NEPA. Construction and operation of the PGF must be approved under Washington State and local authority (Benton County) and requires environmental review under Washington's State Environmental Policy Act (SEPA). Benton County is the lead agency under SEPA.

Relevant local/state and federal agencies have been informed and participated in the process of preparing the Draft EIS, which is a joint NEPA/SEPA document. Notice of the intent to prepare an EIS was sent to local/state and federal agencies. These same agencies were invited to attend public meetings held on the project and comment on the DRAFT EIS. Comments on project scope and suggestions for preparation of the Draft EIS were received from Washington Department of Transportation, Washington Department of Ecology and Washington Department of Fish and Game. Informal consultation was conducted by the U.S. Fish & Wildlife Service and National Marine Fisheries Service and the Washington Historic Preservation Office was contacted. Comments on the Draft EIS were received from the EPA, U.S. Department of Agriculture (Forest Service) and several state and local agencies. None of these agencies has requested cooperating agency status in the preparation of the joint State/Federal EIS for the Plymouth Energy Project.

RESPONSE TO COMMENT I-16

Comment acknowledged. The suggested regional analysis of power plant and industrial development has not been proposed by BPA, and such a study is beyond the scope of this EIS for the action that is being proposed in this case. However, potential cumulative impacts from the proposed action and other projects in the region are discussed in Section 3.14 of the Draft EIS and by environmental resource for select resources. For example, cumulative air quality impacts are also discussed in Section 3.2.3 and Appendix B of the Draft EIS.

The DEIS failed to adequately describe the cumulative air quality impacts from the proposed Plymouth Power project, in combination with the many proposed, and recently constructed power plants, and industrial facilities, within a 100 radius of Plymouth, and along with other regional NOx sources.

There is a total of approximately 6000 TPY of proposed and existing NOX emissions in the vicinity of Plymouth Power, not counting the Boardman, Oregon power plant's emissions of 17,762 TPY. Few existing Washington sources are counted in this inventory, so this figure is drastically understated. An EIS should be prepared that would include a comprehensive NOX area inventory, including but not limited to the Washington sources that are not listed here.

SOME NEARBY NOX SOURCES

BOARDMAN POWER PLANT
17762 TPY (Tons per year) of NOX.
This is a coal fired power plant near Boardman, Oregon.

COYOTE SPRINGS POWER PLANT
This plant, near Hermiston, Oregon, has one turbine emitting 287 TPY of NOX. It was permitted in 1995. Another turbine was permitted in 1995, which is under construction. It will emit another 287 TPY.

HERMISTON POWER PARTNERS
This plant was permitted for 270 TPY of NOX in 1995. Later permit amendments bumped them to 314 TPY. It is now operating.

US GENERATING
This 500 MW power plant, shows 270 TPY of NOX emissions. It was permitted about five years ago.

PIPELINE COMPRESSOR STATIONS
The Northwest Pipeline, and the Pacific Gas Transmission natural gas pipelines, both run through the Columbia River area Both pipelines utilize several compressors/pumps that are large NOX sources, including the Roosevelt compressor station in Klickitat County.

PGET
NOX EMISSIONS COMPRESSOR INVENTORY

Ione:	621 TPY.
Kent	261 TPY
Starbuck	177 TPY
Wallula	85 pty

NORTHWEST PIPELINE

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I-19 (cont.)

RESPONSE TO COMMENT I-17

The Draft EIS included two cumulative impact assessments. The assessment in Appendix B-1 evaluated the potential cumulative impacts on local air quality in Plymouth. The assessment in Appendix B-2 evaluated the potential cumulative impacts on regional haze (the most sensitive indicator of regional air quality).

Although the impacts from PGF alone are less than or only slightly over the concentrations deemed insignificant by EPA's Prevention of Significant Deterioration permit process, a local cumulative impact assessment was conducted to focus on the unprecedented increase in local power plant projects. The assessment focused on new power plant projects primarily because the pollutants emitted from gas-fired combustion turbines are the same and therefore had a higher potential for cumulative impacts. Emissions from the existing Boardman coal-fired power plant were included in this analysis because it is the largest air pollution source in the immediate area.

The comment mentions four proposed projects located west of the Cascades: the Umatilla Depot incinerator near Umatilla, the Pacific Rim Ethanol Plant in Moses Lake, the Cliffs power plant project near Goldendale, and Boise Cascade's expansion of its Wallula mill. Table I-17-1 identifies emission increases associated with these four projects and

Table I-17-1
Emissions (tons/year) and Locations of Other Proposed Projects

	NOx	SO_2	PM_{10}	Distance	Direction
Boise Cascade	658	0	0	25	NE
Pacific Rim Ethanol	133	1	81	84	N
Umatilla	129	22	20	7	SSW
Cliffs	88	14	69	68	WSW
"Total 4 Projects"	1008	37	170	-	-
Boardman Power Plant	17,761	30,450	1,056	-	-
"Total 4 Projects" / Boardman	6%	0%	16%	-	-
Total "Cumulative projects"	19,576	30,665	2,339	-	-
"Total 4 Projects" / "Cumulative projects"	5%	0%	7%	-	

Their pipeline runs along the Columbia from Clark County, Washington (Washougal) to Hermiston, and branches northeast towards Spokane, and southeast towards Boise. Oregon Department of Environmental Quality (DEQ) files states this pipeline has compressor stations every 50 miles. An Oregon DEQ emissions inventory did list the following nearby compressor stations:

Stanfield 15.2 TPY of NOX.
Meacham 585 TPY, according to their permit renewal in 1996 .

There are other compressor stations along the pipeline route in Washington on the Northwest Pipeline, with large NOX emissions, including the Washougal and Klickitat/Roosevelt stations.

The NW pipeline compressor in Baker County, Oregon, increased its NOX emissions in 1997 from 131 to 257 TPY.

Compressor station known total: 2000-odd TPY of NOX, not counting Baker City, Plymouth, or Roosevelt. These compressor stations were not apparently included in the cumulative air impacts analysis.

OTHER EXISTING NOX SOURCES IN NORTHEAST OREGON AND SOUTHEAST WASHINGTON

NAME	NOX IN TPY	
UW/Pullman	250	
Boise/Wallula	658	
Kinzua	153	
Boise	>385	La Grande
Boise	>250	Elgin
Co-Gen II	187	Prairie BPA and Benton County
	900-odd total	

Both of the smaller Boise facilities were significant NOX sources, that conducted several expansions and increased their NOX emissions, since 1984 to the present. Their actual NOX emissions are not known, since they did not get the required permits from DEQ prior to these expansions. The EPA has a Notice of Violation pending against both facilities. These two facilities did not submit to the PSD process–yet.

UNDER 100 TPY-NOX

Joseph Lumber	36	Joseph
Dee Forest	53	Hood River
Grant Western	38	John Day
Simplot	97	Hermiston
Lamb-Weston	70	Hermiston

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I-19 (cont.)

their locations relative to the PGF. Although the emissions associated with these projects are noteworthy, three of the four projects are located far enough away (25-84 miles) that there would be no discernible local air quality impact in Plymouth. The four plants are also located in different directions relative to PGF, so a wind that might bring pollution from one project toward Plymouth would carry pollution from the others away from Plymouth.

Furthermore, even if these project were in the same locale, their combined emissions are small (0-16 percent) compared to just one of the power plants included in the local cumulative impact analysis (the Boardman plant). Consequently, the increase in local ambient concentrations would be small even if the plants identified in this comment were local. If one compares the combined emissions from all four of the projects identified by Mr. Williams with the total emissions considered in the local cumulative impact assessment, the relative increase is even smaller (0-6 percent).

Considering the fact that the additional sources identified in the comment are located in different directions from Plymouth, that 3 of the 4 are more than 25 miles away, and that the increase in emissions over those already considered in the cumulative impact assessment is very small, it is unlikely that they would have a significant cumulative impact when combined with the PGF emissions. Therefore, additional cumulative impact analyses are not warranted.

The regional cumulative impacts assessment included the Cliffs project, as it was deemed by BPA as a power project likely to go forward. Consequently the cumulative impacts of PGF with the Cliffs project were evaluated in the Draft EIS. We note, however, that several large projects included in the regional cumulative impact assessment are on hold or have been canceled. Both Duke Energy projects at Satsop (totaling 1,300 MW) have been suspended, and it appears that development of the Wallula power plant project (1,300 MW) is unlikely because the options of purchase of the site property have lapsed and Emission Reduction Credits that were to be used have expired. Proposed emissions from PGF are approximately 25 percent of those proposed for the Wallula

300-odd total

PROPOSED NEW POWER PLANTS AND NOX SOURCES

WALLULA

This 1300 MW project will emit about 434 ton/year of NOX and 1400 ton/year of total criteria air pollutants, and another 380 ton/year of ammonia, which could contribute to another 1600 ton/year of secondary particulate formation.

CONFEDERATED UMATILLA TRIBES

This 1200 MW plant is a partnership between the Umatilla Tribe, the Port of Umatilla, a private developer, and the Eugene, Oregon Water & Electric Board. It is proposed for near McNary Dam and the BPA and Benton County of Umatilla in eastern Oregon, on Tribal land. Its air emissions will be similar to the Wallula facility.

GOLDENDALE SMELTER CLIFFS PROJECT

The BPA recently issued a ROD for a new turbine at this facility, which will emit about 100 TPY of NOx. This facility, and the Boise/Wallula Mill expansion was left off of the cumulative impact-air quality list in Chapter 3.14.

GOLDENDALE ENERGY

This 249 MW power plant will come on line in 2003, producing about 77 TPY of NOx.

AVISTA/LONGVIEW

This 300 MW plant will be across the street from the Weyerhaeuser mill. It will emit about 100 ton/year of NOX, and another 200 ton/year of other pollutants. Its construction was recently halted but it is about 70% complete.

UMATILLA AND MORROW GENERATING

This proposed plants by PG&E National Energy will generate about 1000 MW and produce about 500 TPY of NOx. The Umatilla plant is fully permitted.

PACIFIC RIM ETHANOL

This proposed alcohol refinery near Moses Lake will emit about 200 TPY of NOx and about 500 TPY of total criteria pollutants. It was not cited in the cumulative air impact analysis.

ALTERNATIVE SIZE

One alternative would be sizing the power plant to supply only the amount of electricity that is currently under contac. in a power sales agreement. The DEIS does not say how much power is already obligated in a sales agreement. It is likely that the proposed power plant is larger than needed to supply any current sales agreement. Instead, the plant will market its excess electricity into the regional power grid. If the plant were smaller, it could still supply its contractual

I-19 (cont.)

I-20

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power plant or the Satsop plants. Development of several other projects considered in the regional analysis has slowed or been postponed. Consequently, the regional cumulative assessment overstates potential impacts from projects in the development stage.

RESPONSE TO COMMENT I-18

See Response to Comment A-1 for discussion about air quality impacts. The lead agencies are unaware of any "certifications" that the air quality in this area is degraded. Although there are concerns about usability degradation, existing air quality in the Plymouth area is generally good.

RESPONSE TO COMMENT I-19

Please see Responses to Comment I-16 and I-17.

RESPONSE TO COMMENT I-20

Results of the dispersion modeling completed for the proposed project indicate that the associated air quality impacts would not be significant, even with the size proposed. The PGF could be considered mid-size when compared to other combined cycle projects that have recently come on line or are being constructed in the Pacific Northwest. Other recent projects include:

Fredrickson (Pierce Co.) 248 MW

Mint Farm (Cowlitz Co.) – 319 MW (construction suspended)

Chehalis Generation Facility (Lewis Co.) – 520 MW

Goldendale (Klickitat Co.) – 248 MW (construction delayed)

Hermiston (Umatilla Co.) – 546 MW

Coyote Springs(Morrow Co.) – 260 MW

Larger projects including projects over 1000 MW have been proposed but have been deferred or canceled (e.g., Starbuck, Satsop 1 and 2, Wallula). Combined-cycle are among the most efficient at producing electrical energy and more efficient than simple-cycle power generation

obligations, but there would be less significant impacts, especially air emissions.[3]

I-20 (cont.)

I-21

ALTERNATIVE POLLUTION CONTROL–ELIMINATE AMMONIA THREAT

The power plant will store, and emit ammonia for use in their SCR air pollution scrubbing system. This presents dangers to public health and to air quality. SCONOX is an alternative pollution scrubbing system that does not use ammonia. SCONOX should have been comprehensively discussed as an alternative to the proposed project.

BENEFITS OF SCONOx NEED TO BE CONSIDERED

The SCR system proposed for use by the Applicants results in a number of environmental problems that are reduced or eliminated with the use of SCONOx. These problems include: (1) hazards from accidental releases of the ammonia used in the SCR system during its transportation and handling; (2) the formation of particulate matter from the oxidation of SO_2 in the SCR catalyst; (3) the formation of particulate matter from reactions between ammonia and SO_2; (4) generation and disposal of the hazardous SCR catalyst at the end of its useful life; (5) inability to control NOx and CO emissions during startups and shutdowns; (6) increase in NO_2 from the use of dry low NOx combustor.

SCONOX would produce greater control of NOX and other pollutants, and eliminate ammonia emissions, and the threat of releases from storage and transport of ammonia. The EPA has recently ruled that SCONOX is considered technically "Available" for NOX control on natural gas fired turbine power plants.

I-22

ALTERNATIVE DESIGNS TO FURTHER REDUCE WATER USE AND DISCHARGE

The proposed plant will use a combination of air and water cooling. Nonetheless, it will consume an average of over 600 gallons per minute of water; or about one million gallons per day. It will also discharge about 125 gpm.

Six hundred gallons/minute is a very high rate of water use for this size of power plant. Many power plants are designed to generate far more energy, while at the same time using far less water than is proposed for this plant. For instance, the proposed natural gas fired Chehalis power plant will generate more than twice as much energy, but will use only about one third as much water. It will be solely air cooled.

Many power plants are also able to function without discharging 125 gpm of waste water, also, including the applicant's Sumas I plant. The DEIS should have comprehensively discussed alternative designs of the facility that would reduce water use and discharge, as follows.

AIR COOLING

This alternative would include complete air cooling, rather than partial water cooling for the facility. The commenters are aware of many existing and proposed power plants that are solely

facilities which are often developed in 50 or 100 MW projects. Further as plant size increases some additional increase in generation efficiency can be realized. The project proponent has proposed the use of a Siemens Westinghouse 501 F gas turbine which will produce 180 MW (or it's equivalent). The next smaller model gas turbine is the 501 D5A which produces 118 MW. The larger 501 F gas turbine combined cycle has a thermal efficiency of 52.5 percent. If the smaller 501 D5A gas turbine is substituted the cycle thermal efficiency drops to 49.5 percent. Thus the selected power plant is 6 percent more efficient than the next smaller size plant. Consequently the larger plant consumes 6 percent less fuel and emits 6 percent less air emissions per MW than would the smaller plant.

Project developers optimize project size and efficiency based on expectation of future market economics. A key objective in project formulation is to maximize generation efficiency and thus competitiveness. As non-utility generator, the project proponent must rely on being positioned in a competitive market as a low cost producer. This plant is designed to be a low cost producer of electrical power within the constraints of the site.

Since the proposed project has no significant impacts after mitigation and a smaller plant would not substantially reduce impacts, further consideration of project alternatives based on smaller project size was not warranted.

RESPONSE TO COMMENT I-21

While a detailed evaluation of air pollution control technologies is typically deemed too technical for an EIS, the Notice of Construction air quality permit application for the PGF addressed SCONOx. SCONOx is a developing technology that has been applied to small combustion turbines, but it has not been successfully demonstrated in commercial operation of large combustion turbines generating facilities such as PGF. Therefore, air pollution permitting agencies across the country have consistently selected Selective Catalytic Reduction (SCR) rather than SCONOx for NOx control on projects such as PGF. SCR is capable of achieving the same guaranteed emission rate as SCONOx (2 ppm NOx).

air cooled, including the two Neil Simpson plants and the Wyodak plant in Wyoming, the permitted Chehalis Power facility in the State of Washington, the Doswell facility in Virginia, the Matimba and Kendal powerhouses in South Africa, the Rosebud plant in Montana, the Linden and Sayreville plants in New Jersey, Colorado Springs near Fountain, Colorado, Diamond Generating near Goodsprings, Nevada, Duke, and Miriant, both near Las Vegas, Reliant's Choctaw County projects near French Camp, Mississippi, and its Hunterstown, Pennsylvania, project, Taiyuan #2 in China, Trakya in Turkey, Uran III in India, Tousa in Iran, and the Camarillo facility in Ventura County, California.

In addition, most large power plants permitted recently in California have been exclusively air cooled, including Sutter Power, and Otay Mesa. Total Air cooling of the Plymouth plant could reduce water use by 70% or more.

HYBRID COOLING SYSTEMS

These plant designs use a combination of both air and water cooling, and are in use at the West Cogeneration plant in Germany, and the Exeter Energy plant in Conn., USA. Three Mountain Power is California is another hybrid cooled plant, as is Mass Power's Indian Orchard plant. Water use is cut approximately in half. While the Plymouth plant apparently proposes a variation of a hybrid system, its water use is still high, compared to other air cooled plants.

For instance, the Plymouth facility will use as much water to generate 304 MW, (1100 a/f/yr, or 673 gal/min) as will the Lakefield Junction plant in Minnesota, to generate over 600 MW. Diamond Energy's Nevada plant will use only 20-50 af/year to generate 500 MW, according to published accounts. Colorado Springs/Fountain will use only 80 gpm to generate 480 MW, compared to Plymouth Energy's 673 gpm, according to published accounts.

ZERO DISCHARGE PLANTS

These types of facilities extensively re-treat and re-use their waste water, often with the reverse osmosis membrane process. Public Service in New Mexico has employed this technology for over 20 years, as does the Massena, New York plant, Ocean State in Burrillville, Rhode Island, and FJ Gannon in Florida. There are several variations on this process, including brine concentration. We understand that HPD plant, in Naperville, Illinois, uses this process. Staged cooling, used at Pasco in Dade County, Florida employs this alternative. We read that the developer's own Sumas I plant is zero discharge.

WATER QUALITY AND QUANTITY IMPACTS

The DEIS at 2-27 states that there will be high levels of suspended solids in the project's effluent, and the waste water will have to be blended at a ratio of 10-1 before it can be used for irrigation. In other words, the project will require about 500 million gallons per year for diluting the polluted waste water from the power plant. This scheme of diluting the concentrated pollutants in the effluent, for use as irrigation, will require the permanent commitment of one-half billion gallons of irrigation water as a dilutant. This is a large and significant commitment of an important natural resource, water, in a highly arid area.

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I-22 (cont.)

I-23

I-24

PGF proposes to employ urea or an aqueous solution as the source of ammonia for the SCR control technology. These options avoid most of the risks associated with the use of anhydrous ammonia.

There would be an increase in particulate matter emissions as a result of the SCR. This increase was included in the emission rates examined in the Draft EIS and the air quality permit application. Predicted concentrations were found to be less than or only slightly greater than concentrations deemed insignificant by EPA.

In addition, there is a degree of excess (unreacted) ammonia that is emitted from the stack of a power plant employing SCR. The proposed ammonia emission rate is half that typically proposed for similar projects. At the point of maximum impact, predicted ambient ammonia concentrations resulting from PGF are less than 5 percent of the toxic air pollutant criterion established by Ecology.

RESPONSE TO COMMENT I-22

The Applicant is proposing a hybrid cooling system that includes an air-cooled condenser (ACC) and a conventional wet/condenser wet tower cooling system. The project description describes that the condensing cooling load would be shared and balanced between the two systems to maximize cooling efficiency and minimize consumptive water use. During periods of cool temperature, the cooling load would be completely directed to the ACC. If the project were to rely solely on an ACC, plant electrical output would be reduced during periods of higher temperature and plant capital and operating costs would be increased. Since the project proponent has usable water available they have elected this composite cooling system to balance water use with loss of plant output and increase in costs. Since no significant environmental impacts would result from the consumptive water use required by the composite system, sole reliance on an ACC for plant cooling was not required.

The DEIS should have discussed alternatives that would not require the commitment of this massive amount of water to dilute the contaminated effluent from the power plant.

I-24 (cont.)

The water tests in the DEIS at Table 2.1 did not present an analysis of the trace metals and radioactive materials that may be present in the cooling water. Even if these types of materials area present in very small amounts, they will be concentrated by 1000% by the cooling cycles, and this activity could produce a significant concentration of potentially toxic materials in the irrigation water. We are aware that the neighboring Columbia River water does contain measurable levels of toxic metals such as chromium and radioactive materials, and it is likely that the area's groundwater may mirror the contents of the River water.

I-25

PIPELINE IMPACTS

The proposed power plant and its support facilities include a 800 foot long natural gas pipeline lateral (p. 2-25). There are many other natural gas pipelines around the country, and in the Northwest, that were constructed according to federal standards. But in the Northwest alone, pipelines have blown up three times within the last few years.

I-26

A pipeline just a few miles from here, near Bonneville Dam, recently exploded and burned on February 27, 1999. The roar from the explosion was heard for two miles. The 300 foot high fireball was so huge it was visible for miles. Route 14 in Washington was closed to protect the public. Press accounts state that earth movement from recent heavy rains may have been responsible for the pipeline break. The fire destroyed a resort hotel that was under construction and a nearby dwelling.

Near Kalama, Washington, a natural gas pipeline broke in February, 1997. Again, a 300 foot high fireball blazed into the sky. And just one day earlier, the same pipeline exploded and burned near Bellingham, Washington.

In March of 1995, that same pipeline had raptured and blew up near Castle Rock, Washington. After that 1995 explosion, the company removed soil from 300 feet of the pipeline, to relieve any stress. But less than two years later, it blew up again. Again, soil movement was the cause of the pipeline breakage, according to published accounts.

There have been a total of at least ten large natural gas pipeline explosions, since 1978 in the Northwest, including other ruptures in Stevenson, Washington, La Grande, Oregon, and Montpelier, Idaho. All of these explosions have been on the Williams Pipeline system that will supply this proposed power plant.

A few years ago, a construction backhoe caused a leak in a Northwest Natural Gas pipeline recently in Rainier. Seventy five people were evacuated. There is other evidence regarding the potential impact on public health and safety from natural gas pipelines.

Earlier this year, at least six people were killed in a natural gas pipeline explosion near Carlsbad.

RESPONSE TO COMMENT I-23

Zero wastewater discharge system consists of equipment to reduce the contaminants in cooling tower and boiler blowdown and recycling wastewater. These systems reduce plant electrical output by increasing internal plant electrical loads. They also produce a sludge waste from the water treatment system that requires disposal and are not commonly used in power plants. No significant environmental impacts were identified from disposal of the cooling system blowdown by the method proposed by the Applicant.

Further, the PGF water supply would be obtained from groundwater sources formerly used for agricultural irrigation and wastewater flows returned to maintain agricultural production. While a zero discharge system would reduce water use, it would eliminate the return water made available by the project for continued support of agricultural operations.

Zero wastewater discharge is a technology that has valid applications. As with all technologies, there are times when its application is not appropriate. Zero wastewater is not the appropriate technology for this project. The project obtains a portion of its water from a fruit orchard. The water is used by the power plant and the power plant's wastewater is returned to the orchard where it is used as irrigation water in the orchards. The wastewater from this project is used to grow fruit trees. The plant concentrates minerals in the well water supply and discharges them as wastewater. If the mineral concentration of the well water were to increase (for some unknown reason) the plant will actually have to decrease the concentration ratio and consequently, discharge more wastewater, to avoid damage to the orchard.

The zero discharge concept is not valid when the wastewater has beneficial use.

RESPONSE TO COMMENT I-24

Please see Response to Comment I-22.

RESPONSE TO COMMENT I-25

The land-applied water would be industrial wastewater, and therefore would be subject to the Industrial Waste Discharge Permit, not drinking water standards. Additional water quality testing was performed in November 2002 on groundwater beneath the site and included trace metals and radioactive materials. Based on these new results, the concentrations of constituents in the blended blowdown (cooling water discharge) that would be applied to the farmland were calculated and are shown below on Table I-25-1.

As stated in Section 3.3.2.2.1 of the Draft EIS, an engineering report for wastewater land application would be prepared as part of the permit process. The engineering report would include evaluation of site area soils and irrigation requirements, process wastewater constituents, and a proposed crop plan (as part of the Industrial Waste Discharge Permit) for use of the dilute wastewater for irrigation. As part of this plan, a monitoring program would be implemented for the process wastewater and site soils to detect potential impacts before they become significant. With proper wastewater treatment, land application and monitoring, the impacts of wastewater application to the crops, soils and groundwater in the site area are expected to be less than significant. If in order to issue an Industrial Waste Discharge Permit, the Washington Department of Ecology requires a higher blending ratio, additional land owned by Plymouth Farm is available for application. See Appendix A in the Draft EIS for further information about the land application of wastewater.

RESPONSE TO COMMENT I-26

The commentor describes natural gas pipeline incidents, including incidents in Washington where a release of natural gas from an underground pipeline caused evacuation of local population, property damage and personal injury. The potential for pipeline accidents is governed by a number of factors including age of the pipeline, size and operating pressure, construction quality and impacts to the pipeline from third parties. Most of the Washington-based incidents described occurred on the main natural gas transmission lines (24 – 36 inch diameter) that (1)

Table I-25-1
Inorganic Analysis, Cooling Water Discharge

Parameter	Raw Water (Well #4)	Blowdown Water (10 cycles)	Weighted Average 10:1 Dilution, Fresh Water to Blowdown
Conductivity (um/cm)	393	3930	714.55
TDS	296	2960	538.18
Nitrate	29	290	52.73
Phosphorus	0.08	0.8	0.20
Ammonia Nitrogen	0.5	5	0.91
Aluminum	0.04	0.4	0.07
Boron	0.06	0.6	0.11
Barium	0.028	0.28	0.05
Calcium	18	180	32.73
Copper	0.011	0.11	0.02
Iron	0.005	0.05	0.01
Potassium	3.9	39	7.09
Magnesium	14	140	25.45
Sodium	22	220	40.00
Lead	0.01	0.1	0.02
Sulfur	20	200	36.36
Silicon	4.8	48	8.73
Tin	0.027	0.27	0.05
Strontium	0.18	1.8	0.33
Zinc	0.018	0.18	0.03
Gross Alpha (pCi/l)	13.88	138.8	25.24

Notes:

Units are in milligrams per liter (mg/L), unless otherwise noted

Other metals and radionuclides were not detected at reporting limits and were not used as part of this analysis

New Mexico, and another six were injured. Landslides in Ventura county, California ruptured several natural gas pipelines in February, 1998, again after heavy rain. Between 1965 and 1986, there have been 250 pipeline failures in the United States as a result of stress corrosion cracking, caused by a combination of water, soil types, and gas temperature within the pipelines.

Twenty-one people were killed during 1995 from natural gas pipeline accidents.[4] A Transwestern Pipeline natural gas pipeline exploded on August 20, 1994 in New Mexico, near the Rio Grande River, damaging a bridge. An October, 1994 explosion of a pipeline in Torrance, California, injured 30. A December, 1989 pipeline rupture caused by a farmer's plow, triggered the evacuation of 600 people in Butler, Illinois.

In March, 1994, a natural gas pipeline exploded in New Jersey, killing and injuring scores of people and creating a 30 foot deep crater and a fire that destroyed eight buildings and severely damaged six more buildings.

All of these pipelines were constructed to federal standards, and monitored by federal agencies. The DEIS should explain, how with all the mitigation measures and careful engineering, pipelines, including facilities in Washington State, on the very pipeline that will service this power plant, can still blow up. When these events occurred in a populated areas, there may be heavy loss of life and property. These pipeline explosions are significant impacts. Additional protective measures should be discussed and implemented, and the problems that caused this explosion should be carefully explained at length in an revised DEIS.

But the DEIS did not discuss pipeline accidents, also known as "service incidents." A service incident is reportable if there is a gas leak causing a death or serious injury, gas ignition, over $5000 in property damage, if it occurred during a test, if it required immediate repair, or if a portion of the line was taken out of service because of the incident.

An revised DEIS should be prepared to describe the likely scenario of service incidents on the pipeline serving the power plant, perhaps by describing several of the recent explosions on this pipeline and at similar pipelines.

Descriptions of a range of several recent incidents should be provided, so that readers and commentors can be apprised of the possible impacts of service incidents. This is appropriate because service incidents can be expected over a 50 year life span for these pipelines. The DEIS should also have discussed whether, and how local agencies in this rural area would respond to a pipeline explosion and fire.

I-26 (cont.)

POWER PLANT ACCIDENTS

The DEIS failed to discuss the potential for accidents and explosions at this proposed facility. On

I-27

[4] New York Times, 4/9/97, p. 1.

transport large volumes of gas at operating pressures in the range of 2,500 psi., and (2) have long distance routes that cross the state. The proposed gas pipeline lateral from the Williams Plymouth Compressor Station to the PGF would be a natural gas distribution line approximately 800 feet long. The distribution line would be 8 inches in diameter and would operate at a maximum pressure of approximately 600 psi. The pipeline lateral route would be located in a rural area with no nearby population centers, and would cross a portion of the Plymouth Farm that will remain in agricultural use (an area between the compressor station and the PGF site). No occupied buildings would be constructed on or adjacent to the pipeline. Section 2.2.5 in the Draft EIS describes the proposed gas pipeline lateral in more detail.

The potential for an accidental release to any particular portion of a pipeline is statistically extremely low. This potential is further reduced by the fact that the lateral would be newly-constructed, and would be located in an area with controlled access and use, i.e., the Plymouth Farm minimizes the potential for unauthorized third party activities that could impact the pipeline. As noted in Section 2.2.8.4 in the Draft EIS (Construction Sequence – Gas Pipeline), the pipeline lateral would be constructed in accordance with federal Department of Transportation regulations, which set safety standards for pipeline design and construction that minimize the potential for pipeline failure and accidental release of natural gas. Construction of the pipeline lateral in accordance with these standards, together with the pipeline's rural location, the absence of adjacent occupied buildings, and the small diameter and lower operating pressure minimize the potential for an accidental release that could lead to impacts to environmental resources or the local population. See additional discussion of requirements for emergency services in the Response to Comment I-26.

RESPONSE TO COMMENT I-27

The commentor believes that the power plant could represent a fire and explosion risk. While fire and explosion accidents have been recorded at power plants, such facilities are designed and operated in accordance

occasion, similar power plants have experienced fires and explosions that have damaged property and killed people.

Just five days ago, on October 8th, 2002, a massive explosion at the Florida Power & Light natural gas fired Palm Beach plant rocked two counties, followed by a hydrogen-fed fire. The explosion shook houses and rattled windows, and was as loud as a sonic boom. In January, 2002, there was a hydrogen explosion and a resulting fire at the natural gas fired BC Hydro plant in Port Moody, BC.

Less than two weeks ago, on October 1, 2002, there was a nine-alarm fire at the Sithe power plant in Boston, that began in a hydrogen generator. The fire and explosion caused $10 million in property damage.

The Plymouth Power DEIS does not apparently even mention the use of hydrogen at that plant, or list it has being stored, in the Section 3.6, Environmental Health. We understand that hydrogen is routinely used and stored at natural gas fired and other power plants similar to Plymouth Power, including but not limited to these three plants, hat have blown up this year. But this potential impact from explosives and fires from caused or fed by hydrogen, and the impact on emergency services to respond, was not adequately discussed in the DEIS.

At the Sithe blaze, 180 firefighters had to respond. The natural gas fired turbine at the Doswell power plant in Virginia recently suffered an catastrophic fire and explosion. It took 75 fire fighters to quell the resulting fire The DEIS should have discussed what will happen if hundreds of fire fighters are needed to respond to a problem at Plymouth Power.

There were other explosions and fires at power plants recently. An explosion and fire rocked the Black Hills Power and Light power plant in Wyoming, in June, 2002. A back-up generator blew up and caused a "major" fire at the Allegheny Energy plant in Pennsylvania, in July, 2002. Firefighters from at least five communities had to respond to the blaze. A pressure relief valve activation at the Mirant plan in Zeeland, Michigan in August, 2002 caused diversion of traffic, to avoid released gasses. Three workers were killed at a fire in the O'Brien Newark, New Jersey Cogeneration power plant fire recently. At least 20 other fires have been recorded over the last 10 years at power plants, causing another death and $417 million in property damage. The most severe fires often involved the release of lube oil, which ignited. Over 15,000 gallons of lube oil will be stored at Plymouth Power.[5]

There were 272 to 557 equipment failures and accidents per year at power boilers and pressure vessels since 1992, causing almost 200 injuries and 29 deaths, and another 145 to 387 failures, and another 270 injuries and 54 deaths, from unfired pressure vessels, according to Power Magazine, Jan-Feb., 2001, p 53.

[5]Most of these narratives are from the Chemical Safety Board's web site.

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I-27 (cont.)

with specialized building and operating codes to minimize the potential for such accidents. These codes require that the power plant include automatic systems to sense and alarm fires, and trigger fire suppression systems. In addition to these requirements, the PGF would also include a 2 million-gallon fire water tank, a firewater piping and hydrant system, a dedicated fire pump, and a backup diesel drive fire pump, all of which would be continuously available and periodically tested for readiness. All emergency response systems would be initiated automatically in case of emergency. Automatic control systems would shut down or isolate the systems. Relief valves would be installed as required to remove the chances of over pressurizing components. Section 2.2.3.11 of the Draft EIS, Plant Operating and Safety Systems, and Section 4.0 of the Draft EIS, Environmental Consultation, Review and Permitting also discusses these systems and required permits.

In addition to the safety systems, the location of the PGF in a rural area, approximately two and 2.5 miles away from the nearest local population centers of Plymouth, Washington and Umatilla, Oregon, respectively, decreases the chances for damage to population in case of emergency. No residential or other occupied structures would be located directly adjacent to the PGF (see Section 3.8.1.2.1 and Figure 3.8-1 in the Draft EIS). The nearest occupied buildings are scattered farm residences, and operating facilities within the Williams Compressor Station property. Given the rural nature of the site, the limited exposed population, the requirement for plant design under applicable safety codes and the safety systems to be constructed onsite, no significant impact to environmental resources or local population is expected to occur.

The commentor also requests clarification with regard to the onsite use and storage of hydrogen and lubricating oils representing a potential fire and explosion risk. As noted in Section 2.2.3.5 of the Draft EIS, both generators would be air-cooled, so the use and storage of hydrogen would be avoided. Lubricating oils would be stored in special containment that would include an automatically-initiating fire deluge system. See Section 2.2.3.11 in the Draft EIS for more information.

Because Power plants typically store and use many materials that present a danger of fire and explosion, such as hydrogen and lube oil, some of these hundreds of annual accidents at power plants cause injuries, and losses of life and property beyond the power plant boundaries, and require a large response of emergency personnel, as previously described. The dangers from the use and storage of these materials, and even the types of materials to be stored at Plymouth, and the ability or lack thereof of local fire departments to respond, was not discussed in the DEIS. These kinds of serious accidents are significant impacts that should be discussed in an EIS.

I-27 (cont.)

CUMULATIVE EFFECTS OF INCREASED USAGE OF NATURAL GAS

The EIS did not discuss the adverse impacts from the increased exploration and processing of gas in Canada, in part sparked by the development of these this project.

I-28

Discussions of Canadian impacts is mandated by Presidential findings during the Carter Administration regarding the scope of NEPA-covered projects. A description of Cross-border impacts are also appropriate, considering that the Canada Energy Board requires assessments of impacts in the United States, when evaluating proposals for Canadian pipelines.

Nor did the DEIS adequately discuss the cumulative impacts of this project and the many other power projects in the Northwest, on the natural gas supplies. Although this very topic was the subject of a chapter in the Wallula Power EIS, it received inadequate discussion in this document, even though the DEIS admitted that the cumulative impact of some of the recently proposed power plants in the Northwest, was the additional consumption of over 6% of domestic natural gas reserves.

I-29

PM-10

This plant will apparently emit 88 tons per year (TPY) of PM-10 from its turbines alone (Table B-2-2) PM-10 is fine particulate that is capable of being drawn deep into the lungs. PM-10 is highly damaging to human health. But in addition to the power plant exhaust, there are other sources of PM-10 and total suspended particulate (TSP) from this project, including the cooling tower. We do not see any proposed limits to control cooling tower PM emissions in the DEIS.

I-30

ADDITIONAL PM SOURCES

The DEIS also lacks adequate information to assure commentors that its calculations included the impact from formation of secondary PM by conversion of ammonia, nitrogen and sulfur compounds.

COOLING TOWER DRIFT

The cooling towers are PM-10 and TSP sources, to the degree which the cooling water contain solids, which are emitted from the cooling tower exhaust as particulate. A large power plant using water high in solids content can emit many tons per year of PM-10 and TSP. For instance the Goldendale Energy plant was predicted to emit 6.6 TPY of PM, and Plymouth Energy is 20%

The plant would be designed and built in accordance with the latest codes and standards (1) to prevent an accident from occurring and (2) if an accident were to occur, to contain the damage of the accident. The plant would be as safe as current conditions allow. Unfortunately, all human endeavors have some risk, however slight, of accident. Although it is not possible to guarantee that an accident would never occur at the plant, it is possible to design, build and operate the plant to minimize the chances of an accident.

Section 3.12 of the Draft EIS discusses the availability of emergency response equipment locally, and response times for equipment and personnel available on a cooperative basis from the Tri-cities communities. As a rural area, local fire and emergency medical response service near Plymouth is limited to volunteers and equipment located in Plymouth and Patterson. Were a major incident to occur at the proposed power plant, personnel end equipment would be called from Tri-Cities, Hermiston and Umatilla under joint aid agreements.

The Williams Gas Pipeline Plymouth District offers an emergency response training class to fire districts, police and other emergency responders. The class covers the properties of natural gas under pressure and liquid natural gas, provides information about fire and flammable liquids, and discusses how to respond to emergencies. The day-long class is free of cost, offered each November at the Plymouth District, and includes lecture, discussion and hands-on response to fires. Emergency services personnel from throughout the Plymouth area have attended these training sessions. Most of the Fire District 6 firefighters have attended the training (Weaver 2003).

Reference:

Weaver, Jeremy, 2003. Telephone communication between Jeremy Weaver, Operations Technician 3, Williams Gas Pipeline – Plymouth Plant, and Betty Renkor, URS Corporation. January 6, 2003.

larger. The PM emissions from the cooling tower will contribute significantly to the ambient air concentrations of PM_{10} concentrations. The effluents have low exit temperatures, low exit velocities and correspondingly are low in momentum and buoyancy. Switching to full air cooling would also reduce PM and TSP emissions, since a cooling tower will no longer be needed.

Cooling tower emissions also contain salts, metals, water treatment chemicals, and other contaminants, which could degrade the quality of soils, and affect human health, wherever the cooling tower drift is deposited. .

THE DEIS FAILED TO CONSIDER HOW AMMONIA SLIP WILL ADD TO PM10 EMISSIONS

The DEIS failed to describe the reactions between SO3, NH3, and NO2, which form salts, some of which are emitted to the atmosphere and some of which deposit within the HRSG. Equations can be used to estimate a portion of the secondary PM_{10} that is formed from ammonia slip. Secondary PM_{10} can be formed by reaction of ammonia with SO_3 and NO_2 emitted by the gas turbines and present in the stack gases and plume as well as additional SO_3 and NO_2 that are present downwind in the atmosphere. Additional ammonium nitrate could form from the reaction of NO_2 in the atmosphere with any emitted ammonia. This additional PM_{10} may not have been included in the Project's emissions estimates. Apparently the formation of secondary PM10, ammonia nitrate, from the proposed project, was not done in the DEIS, so the combined PM10 emissions will be more than what was estimated. BPA's own EIS on the Wallula Power project admitted ammonia emissions could produce as much as 460% of their own weight as secondary particulate.

In summary, the DEIS appears to have underestimated the resulting concentrations of PM 10 from the project. These underestimations need to be considered in light of the Federal Land Managers certifications that significance degradation of air quality in nearby Class I areas are already being exceeded. This certification by federal agencies of an already occurring significant impact, that will be increased by the proposed project, was not mentioned in the DEIS

For these reasons, the subject of the health and environmental effects of PM-10 and the plant's contribution individually and cumulatively, should have been presented in depth. Many recently published studies demonstrate that PM-10 and TSP are far more harmful that previously considered. In one study of the Seattle area, days of high particulate concentrations in the air were correlated with increased hospital visits for asthma. In another series of similar studies, days of high particulate concentrations were correlated with days of high death rates in Santa Clara, California, Steubenville, Ohio, Birmingham, Alabama, and Philadelphia, Pennsylvania, among seven separate studies on this topic. Particulate have been recently, convincingly implicated in harm to pulmonary function.

Some important conclusions from these studies is that harmful health effects occur even when particulate concentrations are far, far below the legal limits, there is no apparent particulate threshold for adverse health effects, and that harmful health effects are apparently caused by very

I-30 (cont.)

I-31

RESPONSE TO COMMENT I-28

Section 3.5.2.2.2 of the Draft EIS states that the PGF would be fueled by supplies of natural gas from the U.S. and Canada. According to the Applicant, the project does not have any long-term gas supply contracts that specify the development of specific gas fields in Canada or the U.S. The project would contract for gas supplies from the general gas commodity market and secure transportation of those supplies to the PGF project site via the Williams Pipeline Company gas transportation system. The Williams system interconnects with other natural gas transmission systems giving the PGF access to natural gas supplies throughout the U.S. and Canada. Because natural gas is a commodity, development of new reserves in all areas where reserves are known to exist is an ongoing occurrence independent of the demand for a fuel supply for the PGF. The development of gas reserves occurs as an independent action unrelated to the PGF, and therefore analysis of exploration and production impacts for future Canadian reserves is not warranted.

RESPONSE TO COMMENT I-29

Section 3.5.2.2 and Section 3.5.3 of the Draft EIS discuss natural gas consumed by the PFG in relation to national energy use. These sections also describe the projected fuel use for the PGF (using a conservative worst case analysis), and discuss natural gas consumption by the PGF relative to national consumption. Further, natural gas is a commodity where supplies (both reserves and production) have historically expanded in response to price. It can be expected that operation of the PGF could displace older more inefficient power plants, which would not result in an increase in the total demand for natural gas. If total demand were to increase by the small percentage represented by the PGF, the increase in demand would likely be absorbed by the ability of reserves to increase production. Section 3.5 in the Draft EIS describes the cumulative impacts of other gas-fired power plants in the general region of the proposed PGF and finds that no significant impact to gas supplies would occur.

minor increase in particulate concentrations. This means that even though the Project will not cause violations of the PM legal limits it could still cause significant health impacts. Construction will also create about 1 ton of TSP per acre of disturbance per month. Construction equipment, truck and car traffic related to this project, both in the construction and operation stage, will be an additional PM-10 and TSP source.

It appears from these studies that any increase in PM-10 and TSP levels will cause an adverse health impact. This is a significant health impact that should have been discussed in an EIS. There are important environmental impacts from PM-10 emissions, also.

I-31 (cont.)

PM_{10} FORMATION CAUSES VISIBILITY REDUCTION

I-32

The fact that ammonia/PM reactions actually occur and cause visibility impacts is well documented in the technical literature. A noted atmospheric textbook, for example, contains this vivid description of the problem (Pitts and Pitts, 1999,[6] p. 284):

> "The formation of ammonium nitrate has some interesting implications for visibility reduction. In the Los Angeles air basin, for example, the major NOx sources are at the western, upwind end of the air basin. Approximately 40 miles east in the vicinity of the BPA and Benton County of Chino, there is a large agricultural areas that has significant emissions of ammonia...under typical meteorological conditions, air is carried inland during the day with NOx being oxidized to HNO3 as the air mass moves downwind. When it reaches the agricultural area, the HNO3 reacts with gaseous NH3 to form ammonium nitrate..the particles formed by such gas-to-particle conversion processes are in the size range where they scatter light efficiently, giving the appearance of a very hazy or smoggy atmosphere even though other manifestations of smog such as ozone levels may not be highly elevated."

AMMONIA RELATED PM_{10} FORMATION ENDANGERS BIOTA

I-33

The majority of the ammonia slip reacts with NOx to form ammonium nitrate, which is PM10. This PM10 can be deposited on surrounding hills, located immediately adjacent to the site. This is an especially significant impact, because prior studies demonstrate there is already a high level of ammonia compounds emitted in the vicinity of the project. The Federal Land Managers conducts the IMPROVE air monitoring project in the Columbia Gorge area. IMPROVE's results show than almost 40% of fine particulate in the Gorge vicinity is made up of ammonia compounds; ammonium sulfate and ammonium nitrate. These same ammonia compounds total 50-80% of the visibility-reducing air pollutants in the Gorge vicinity. [7]

[6] Barbara J. Finlayson-Pitts and James N. Pitts, Jr., Chemistry of the Upper and Lower Atmosphere. Theory, Experiments, and Applications, Academic Press, San Diego, 1999.

[7] Van Harem, Frank. WDOE Visibility Coordinator. "Visibility Monitoring Data Analysis for the CRGNSA, 9/96-8/97." Handout distributed at Colombia River Gorge Commission Meeting, April 13, 1999.

RESPONSE TO COMMENT I-30

The response to comment I-21 acknowledges that ammonia slip associated with the use of SCR for NOx control contributes to additional particulate matter emissions. PM_{10} emissions were calculated assuming the worst-case short-term emission rates (considering operating load and ambient temperature) that occur every hour of the year. This is a very conservative assumption because (1) all plants must shut down for occasional maintenance, (2) plants tend to emit pollutants at levels below the emission limits, and (3) because the worst-case short-term PM_{10} emissions occur only during low temperatures and maximum operating load.

When determining emissions from a proposed stationary source, one considers only the pollutants in the stack. PM_{10} formed by the interaction of ammonia with sulfates and nitrates in the HRSG was included in the proposed emission rates and was evaluated in the ISCST3 modeling conducted to evaluate local air quality impacts. However, just as ozone is not considered as an emitted pollutant for facilities that emit NOx or VOCs, secondary aerosols formed in the atmosphere are not considered when determining PM_{10} emissions.

Although not reflected in the PM_{10} emission rates, the CALPUFF modeling used to evaluate regional impacts does consider the formation of secondary particulate matter from ammonia reacting with sulfates and nitrates in the atmosphere downwind of PGF. Even with consideration of secondary aerosol formation, predicted concentrations were found to be far below ambient air quality standards established to protect human health and welfare. Because the formation of secondary PM_{10} takes time, the secondary aerosol contribution to total PM_{10} concentrations increases with distance from the source. Thus, secondary aerosol formation is generally less important locally than on a regional basis.

The Notice of Construction air quality permit application submitted to Benton Clean Air Authority identifies a potential particulate matter emission rate of 0.087 pounds per hour (0.38 tons per year) from the cooling tower. Because this emission rate is negligible in comparison with the 20 pound per hour emission rate associated with the combustion

This additional PM10 would increase the Project's reported contribution to soil nitrogen. The impact of this additional ammonium nitrate has not been evaluated and must be to fully evaluate the environmental impacts of SCR. Ammonia emissions are discussed further in the following comments. These types of reactions, as described above, are a potentially significant impact that should have been discussed in the DEIS

I-33 (cont.)

AMMONIA

The proposed power plant will use, handle, store and transport large amounts of ammonia. Ammonia is listed on the EPA's list of extremely hazardous chemicals. The State of Louisiana has recently tightened regulations governing handling of ammonia.
It is prudent to minimize the use and storage of any hazardous chemicals such as ammonia. Nonetheless, Plymouth Power proposes to transport, use and store large quantities of ammonia on site.

I-34

The DEIS is deficient in failing to describe and address the possible consequences of transporting, piping, storing and emitting hundreds of thousands of pounds of ammonia at this facility every year. There are two issues regarding ammonia. The first issue is the constant release of ammonia from this facility under normal operating conditions. The second issue is the risk of ammonia releases from the storage and transportation of this hazardous chemical.

AMMONIA EMISSIONS UNDER NORMAL OPERATING CONDITIONS

Ammonia may be emitted from the project at 5 parts per million (ppm) which is one/half of the odor threshold. There are other ammonia sources in this area, including feed lots and fertilizer production facilities, and agricultural users of nitrogen based fertilizer, whose applications could contribute to an ambient ammonia level. These other ammonia sources were not evaluated in the DEIS. In this case it is possible that the ammonia odor threshold could be exceeded under adverse air quality mixing conditions, such as inversions. These nearby ammonia sources should have been inventoried, because those sources may cumulatively contribute to formation of secondary particulate.

But no controls for ammonia are discussed, nor is there any modeling that accounts for potential ambient levels of ammonia that would cumulatively join with the proposed facility's emissions. The impacts of ammonia emissions on PM formation were discussed earlier.

RISKS OF AMMONIA RELEASES

The plant will store hundreds of thousand of pounds of ammonia on site, and millions of pounds of ammonia will be transported to this site every year. But the DEIS does not describe the likelihood of a transportation accident, the numbers of truck trips bearing ammonia, the possible size of any ammonia releases from a truck accident, the inability of this rural area's emergency response system to react to a large release, the neighborhoods and businesses that would be threatened by a release or the risk and effects of a release from the ammonia tanks at the power plant, including the risk and effect of a tank failure.

turbine, it was not included in the modeling. Furthermore, the particulate matter associated with dissolved solids in the local water supply is emitted from the cooling tower in droplets. These droplets are much larger than 10 microns and usually cause the particulate matter to deposit on the ground very near the cooling tower. Consequently, we disagree with the contention that the cooling tower would contribute significantly to ambient PM_{10} concentrations.

RESPONSE TO COMMENT I-31

Even at the worst-case location, PM_{10} concentrations attributable to emissions of PM_{10} from PGF are only small fractions of ambient air quality standards established to protect human health. The commentor also appears to have incorrectly assumed that PM_{10} emissions from the facility were underestimated. In fact, actual emissions are expected to be considerably lower than those proposed as permit limits because plant operators would always maintain a margin of safety below the permit limits. In addition, the plant would not always operate at full capacity and must shut down for maintenance periodically.

As indicated in the response to Comment I-30, emissions were calculated according to federal, state, and local procedures. That response also acknowledges that additional particulate matter is formed in the atmosphere, sometimes far downwind of the power plant. However, CALPUFF was used to evaluate the secondary aerosol formation, and the results indicate concentrations far below ambient air quality standards established to protect human health and welfare.

RESPONSE TO COMMENT I-32

Secondary PM_{10} formation related to the interaction of ammonia with sulfates and nitrates in the PGF plume were considered in the CALPUFF evaluation of visibility impacts. See also Responses to Comments A-1, A-2, A-3, I-20, I-29 and I-30.

In fact, the DEIS is virtually silent on this troubling subject, of large scale ammonia releases from transport and storage of large amounts of ammonia on the site, and how, or whether, emergency responses will be conducted. Ammonia releases are fairly common. A study submitted to the Congress revealed there have been over 1000 ammonia releases over one nine year period, which caused 801 injuries, 9 deaths, and 61 evacuations of over 22,000 people. [8]

For instance, There was a release of ammonia in August, 2001 from the Pratt & Whitney power plant in East Hartford, Conn., that caused the shutdown of nearby streets for five hours and led to the evacuation of 20 people. For this reason the commentors urge that the DEIS should have discuss ammonia hazards, and the ability to respond, from storage and transport releases, and any requirements to comply with the CAA amendments governing storage and transport of ammonia and other hazardous materials.

The Project may be subject to the Title III requirements regarding storage of hazardous materials, but those requirements, including a hazard assessment and risk management program, have not yet been developed and reviewed by the public and the relevant agencies. These requirements should have been fulfilled in time for these proceedings, so that the public can evaluate this project's risks in a single round of reviews and meetings.

The DEIS evaluation should also study alternatives on the types of ammonia to be stored and used, for instance the use of urea instead of ammonia, and alternative transport methods for ammonia. While the DEIS suggest that aqueous rather than anhydrous ammonia may be used, urea would be even safer, and anhydrous ammonia should be specifically banned from use because of the increased dangers from its releases.

The DEIS' evaluation should also study the potential impacts of large scale ammonia releases from different site locations, and the release impacts from different types of transport accidents. The alternative of siting the plant farther from populated areas and from the State Highway, to reduce the public's exposure from ammonia releases, should have been discussed.

SOME RECENT RELEASES OF AMMONIA (not a complete list)

evacuations	injuries	location	gallons released
36	1300	Minot, ND	about 140,000
280	4	Washington, IND	Not provided
1000	65	Quebec	" "
1500	0	Morro Bay, CA	300
100-300	n/a	Wauwatosa, Wi	n/a
100	n/a	Columbus, IA	na

[8]Report to Congress Section 112(r) (10) Clean Air Act as Amended. EPA 550-r-93-002. December, 1993.

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I-34 (cont.)

RESPONSE TO COMMENT I-33

In Responses to Comments A-2 and A-9, the Applicant evaluated total nitrogen deposition, including NOx, nitrates, and ammonia. Table A-2-1 in Response to Comment A-2 shows that total nitrogen deposition attributable to PGF in the Class I areas and special areas such as CRGNSA would be very small with respect to established nitrogen deposition criteria and existing background deposition rates.

RESPONSE TO COMMENT I-34

The risks associated with the proposed use of aqueous ammonia (a 19 percent solution of ammonia in water) are much lower than those associated with anhydrous (gaseous) ammonia. Virtually all of the hazards identified in Comment I-33 are associated with the use of anhydrous ammonia. As noted in the Notice of Construction air permit application, sources (such as PGF) employing ammonia in a 19 percent (or lower) solution are exempt from EPA's Risk Management Program because the risks are low. As suggested by the commentor, the proponents of PGF are seriously considering the use of urea as an alternative to aqueous ammonia.

Ammonia emissions from the exhaust stack were evaluated in the dispersion modeling analysis. This analysis determined that the maximum ammonia concentration attributable to the PGF would be only five percent of Washington's Acceptable Source Impact Levels. Consequently, no adverse impacts from ammonia would occur. Note that while the concentration of ammonia in the stack may be up to 5 ppm, predicted concentrations off-site are far below the odor threshold for ammonia. See also Response to Comment I-20.

RESPONSE TO COMMENT I-35

Water treatment chemicals would be used in two areas of the power plant: (1) water purification of boiler feedwater, and (2) water treatment of cooling tower circulating water. Chemicals expected to be used in these two processes include:

not known	15	St. Paul, MN	not provided
not known	9	Lorain, Ohio	10 pounds
230	5	Old Monroe, MO	not known

I-34 (cont.)

IMPACTS FROM WATER DISCHARGES

I-35

The DEIS does not list water treatment chemicals to be used at the plant, and does not list any details of the toxicity of inhibitors or algicides that would be discharged. Lacking a complete discussion of the possibly pollutants in these sources's discharge, it is not possible to conclude that the this source's waste water will not contribute to water treatment problems. These chemicals could also be discharged in the cooling tower discharges.

GLOBAL WARMING

I-36

The DEIS admits that the facility will emit large amounts of carbon dioxide, which is a greenhouse gas. But the DEIS fails to discuss possible mitigation for the carbon dioxide emissions, and also fails to evaluate the contribution made by the plant's massive steam discharges to global warming. Heated water vapor is widely recognized as a contributor to the global warming problem. [9] A change to air cooling would also eliminate this discharge of water vapor, thus partly mitigating the facility's greenhouse gas emissions.

I-37

I-36 (cont.)

This source will not mitigate its CO2 emissions, This plant's large emissions of CO2 and other greenhouse gasses are an unmitigated, potentially significant impact.

SOLID WASTES

I-38

Water treatment for a large power plant can generate as much as 10 tons per month of wastes, as backwash, or filter cake. There are other waste streams, including spent catalyst, which is a hazardous waste. Catalyst wastes could be avoided by used of the SCONOX scrubber system. This generation of wastes was never described adequately in the DEIS. The materials contained in this wastes, the amount to be produced, its destiny, and its impacts on landfill capacity should all have been discussed.

STORMWATER RUNOFF AND SPILLS

I-39

The project will include the creation of impervious surfaces. This will cause the generation of millions of gallons of storm water runoff. This water will be tainted with oil, grease, and other contaminants present on the site and its parking lot and roof. The DEIS did not describe adequately the quality of this runoff, its destiny, and its potential impacts on nearby wetlands and surface waters. While there would be unlined detention ponds the DEIS did not describe to what degree these ponds will treat the storm water to remove pollutants before it is allowed to infiltrate

[9] California Energy Commission, 1991.

Boiler Feedwater Water Treatment:

- inorganic sodium phosphate (food grade material) in the 10 to 20 mg/L range,
- ammonium hydroxide less than 1.0 mg/L, and
- diethyl-hydroxyl amine 0.010 mg/L.

Cooling Tower Water Treatment:

- inorganic phosphate at the 4 to 6 mg/L level,
- 1-hydroxyethylidene-1,1-diphosphonic acid (a common cooling water inhibitor) at 1 to 2 mg/L,
- acrylate copolymer BF Goodrich K-775 (also a common cooling water inhibitor) at the 4 to 6 mg/L level,
- sodium hypochlorite biocide to maintain a free chlorine residual of 0.3 mg/L, and
- sulfuric acid to maintain a pH of 7.8 to 8.2.

The boiler feedwater water treatment system would include transportable elements and would be operated by a vendor. All water treatment wastes would be removed from the power plant site by the water treatment vendor.

The cooling tower wastewater treatment will be as described in Section 2.2.6 of the Draft EIS. Cooling water blowdown would be blended with fresh water to obtain suitable irrigation water. Depending on the number of cycles of concentration, the cooling tower wastewater would be diluted up to 25 times with fresh water in order to meet irrigation standards.

RESPONSE TO COMMENT I-36

Section 3.14.3 of the Draft EIS discusses global warming and the potential for CO_2 emissions to contribute to global warming. Although the PGF could emit up to 983,000 tons of CO_2 per year, the Draft EIS explains that the construction and operation of the PGF will not necessarily result in an increase in overall CO_2 emissions.

into the ground water.

While an oil/water separator will be present, the DEIS did not assure commentors about the degree to which storm water will be channelized through the separator. Nor did the DEIS describe the fate of wastes that are separated from the storm water. The DEIS did not describe the project's compliance with the DOE Stormwater Management rules. For instance, use of oil/water separators is actually criticized as having limited application, in DOE guidance manuals. The DEIS did not describe why a separator was appropriate for this location, or why alternative methods of storm water pollution control were not used. [10]

I-39 (cont.)

LEGIONNAIRES DISEASE

The DEIS did not provide a table of materials stored on site that listed biocides known to be effective against Legionnaires Disease. This disease breeds in moist, warm climates, including cooling towers such as those to be used by Plymouth. It has been spread through the discharge of steam from cooling towers. In March, 2001, for instance, two Ford employees died in Ohio after exposure to Legionnaires' Disease, spread by the facility's industrial cooling towers. Legionnaires Disease organisms have also bee found in the CEGB power plant's cooling tower water, near Stafford, England. Since it is not apparent that Plymouth plans to use appropriate chemical treatment of its cooling tower system to stifle development of the relevant bacteria, there is a threat of Legionnaires Disease from this facility. This should be discussed in a revised DEIS.

I-40

POWER LINE BURIAL ALTERNATIVE AND ELECTROMAGNETIC FIELDS (EMF)

The alternative of burying power lines associated with this project should have been discussed in the DEIS. Power line burial has been used at many projects, and would reduce the visual impact of these projects, and may reduce EMF exposure. EMF exposure is another potentially significant impact that was not discussed in the DEIS.

POWER LINE BURIAL ALTERNATIVE AND ELECTROMAGNETIC FIELDS (EMF)

This project will include a new power line of .6 miles, or a rebuild of the PUD lines. The alternative of burying power lines associated with this project should have been discussed in the DEIS. Power line burial has been used at many projects, and would reduce the visual impact of these projects, and may reduce EMF exposure, and the impacts to avian species which collide with above ground power lines.. Bird Mortality from the new power lines and EMF exposure are other potentially significant impacts that should have been discussed in the DEIS, and power line burial should be discussed as a mitigating factor, and a method of avoiding impacts on the nearby sensitive areas.

I-41

The power lines associated with this project, as currently proposed, are acknowledged as a potentially significant factor because of the possible congestion at McNary substation, according

[10]Department of Ecology, Stormwater Management Manual, Chapter III-7. #91-75.

Electricity demand in the United States is met through a combination of resources. To the extent that electricity demand is met by fossil fuel-fired generation, the use of electricity results in the emission of greenhouse gases. However, different types of electrical generating technologies produce different amounts of greenhouse gases per kilowatt hour of electricity generated. In the United States, coal-fired generation produces an average of 2.10 lbs of CO_2 per kWh, oil-fired generation produces an average of 1.97 lbs of CO_2 per kWh, and natural-gas fired generation produces an average of 1.32 lbs of CO_2 per kWh. (DOE/EPA 2000.) In contrast, the type of highly efficient combined cycle technology that will be used at the PGF produces only about 0.85 lbs of CO_2 per kilowatt hour of electricity generated.

If electricity demand is met by the PGF instead of by less efficient gas, oil or coal fired power plants, the operation of PGF will actually have the effect of reducing the overall emission of CO_2. For this reason, virtually every major authority on global warming recommends the increased reliance on more efficient energy generating technology. In particular, they advocate increased reliance on the technology used in the PGF project – natural gas-fired combined cycle combustion turbine generating technology – as a critical near term strategy for reducing greenhouse gas emissions. (IEA 2001; DOE/EPA 2000; EAI 1998; Montgomery 2001.) The Intergovernmental Panel on Climate Change, for example, concluded that, in the near term, increased reliance upon natural gas and combined cycle technology "will play an important role in emission reduction." (IPCC 2001.)

Accordingly, it would not be appropriate to require the PGF to mitigate its CO_2 emissions. Without a broad-based statutory or regulatory policy that requires all electrical generating facilities to mitigate their CO_2 emissions, requiring an individual new facility, such as the PGF, to mitigate its emissions would only serve to discourage the transition to newer technology that generates electricity with much lower CO_2 emissions.

to page 1-38 in the Wallula FEIS. The DEIS should have addressed to what degree power line burial would address this concern,.

There are many examples of burial of high voltage power lines of considerable length. Since the proposed lines are about 3000 feet long, burial of this line would reduce the visual impact of the project would protect avian species, would reduce the project's above ground "footprint," and would add only about 1/10% of one percent to the project costs; about $500,000.

Some example of actual and proposed burials of large pipeline include the 345 kV line that would be buried for 1700 feet to go under the Namekagon River near Trego, Wisconsin.

Sierra Pacific is burying a 14,000 volt line for about 2000 feet near downtown (Lake) Tahoe City, according to the company's June 9, 1999 press release.

Sierra Pacific is also burying a 120,000 volt (120kV) line for about 1700 feet near Carson City, Nevada, according to the company's April 19, 1999 press release.

Sierra Pacific's longest underground line is 2.6 miles, according to their Media Relations department.

The California Public Utility Commission's consultants, Aspen Environmental, prepared a study of an all-underground route for a 230 kV line near Pleasanton, California (Pleasanton Weekly. "Objectors, Proponents speak out on PG&E Power Line Plan." 2/16/01)

The Sumas II Power Plant has proposed a buried 230 kV line for 1.4 miles, in Abbotsford, Canada, as part of its trans-border proposal. (Canada Newswire. "NSB Receives a Revised DEIS from Sumas Energy II to Construct an International Power Line." October 2000)

The Sargent & Lundy engineering firm's advertising materials list several underground transmission lines for which they provided engineering, including a 115/138-kV line, a 230 kV line in Washington Dc, a 1800 foot 115-kV line in Baltimore, five 230-kV lines in China, two 69 kV lines in Iowa, a 1300 foot 138-kV line in Tennessee, and a one-mile, 138-kV line in Salt Lake City.

This litany of buried transmission lines indicates that this is a practicable, feasible and economic alternative design for this portion of the project. It would reduce the visual and land use impact of the project. For this reason a burial alternative, should have been presented in the DEIS.

I-41 (cont.)

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References:

DOE/EPA 2000. *Carbon Dioxide Emissions from Generation of Electric Power in the United States*, U.S. Department of Energy and Environmental Protection Agency, July 2000.

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IEA 2001. *Energy Technology and Climate Change: A Call to Action.* International Energy Agency.

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Montgomery, W. David, 2001. Prefiled Testimony submitted to the Washington Energy Facility Site Evaluation Council. *In re Application No. 99-1*. 2001.

RESPONSE TO COMMENT I-37

During normal operation of the PGF, there would be no significant steam releases from PGF. Water vapor and droplets would emit from the cooling tower, but to the Applicant's knowledge, no studies exist that suggest that this would be a significant contributor to global warming.

RESPONSE TO COMMENT I-38

The primary source of solid waste from a natural gas-fired power plant with Selective Catalytic Reduction (SCR) air emission control systems are sludges generated by the water treatment system and spent catalyst from the SCR. Other wastes generated in very small qualities include paper, food and packaging waste from plant personnel and solvents, paint and lubricating oil wastes from plant maintenance. The largest waste by volume is typically water treatment waste. The PGF water treatment system would be a vendor-supplied system that would include components that would be periodically removed from the site, cleaned, recharged and returned. Any water treatment sludges would be removed by the vendor and disposed offsite through the vendors operation.

Maintenance wastes, including some hazardous materials, would be removed and disposed offsite by the maintenance contractor. Similarly, spent catalyst from the SCR, which is removed periodically, is also a hazardous waste and would be removed by the SCR maintenance contractor. Since none of these wastes would be stored on site and all would be handled by qualified vendors, minimal risk of these wastes being released at the site exists and no significant impact from their presence is expected.

RESPONSE TO COMMENT I-39

Conceptual site design includes approximately 1.89 acres of impervious surfaces (building and HRSG roofs, the small parking lot and site roads) that would produce storm water runoff during storm events. A maximum storm water runoff during any single event is expected to be 0.82 acre-feet (compared to a storm water pond capacity on the order of 3 acre-feet. Storm water would be collected and directed to the storm water pond (see Figure 2-4 in the Draft EIS) as described in Section 2.2.3.9.4 of the Draft EIS. Areas exposed to storm water runoff would not contain materials that present potential contamination of surface water through runoff. PGF will obtain an Industrial Storm Water Discharge Permit from the state Department of Ecology, which requires compliance with the state's most recent storm water runoff system requirements.

RESPONSE TO COMMENT I-40

Legionnaires disease can be caused by bacteria formed in untreated cooling water used in cooling tower applications. Air drawn through the cooling tower and recirculated to populated interior building spaces as part of a building air conditioning system has been the source of the most publicized outbreaks of Legionnaires disease. As described in Section 2.2.3.6.2 of the Draft EIS, the PGF would utilize a biocide (sodium hypochloride) in the cooling water to destroy organic material, including those bacteria identified with Legionnaires disease, eliminating the risk of contamination. Also, in the case of the PGF, cooling tower draft air would be released to the atmosphere, not to an interior building space, which would significantly mitigate the available pathway for potential contamination.

RESPONSE TO COMMENT I-41

No significant environmental impacts associated with the construction or operation of the preferred or alternative transmission line interconnections were identified. Overhead transmission lines permit the continued use of the land for farming (farming can occur under the line), whereas undergrounding transmission lines may require restricting surface use of the land. Further, like overhead transmission lines, underground transmission lines also generate electromagnetic fields. However, these fields degrade rapidly with distance from the electrical conductors and do not place local populations of workers at risk. A review of the current literature concerning electromagnetic fields can be found in Appendix F of the Wallula Power Project and Wallula-McNary Transmission Line Draft Environmental Impact Statement (DEO/EIS-330) released in February 2002.

The visual impacts resulting from overhead transmission line were analyzed and found not to be significant (see Sections 2.9.2.5, 3.9.2.3.2, and 3.9.2.4 of the Draft EIS).

PLYMOUTH ENERGY PROJECT
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☑ Please put me on your project mailing list. (You are already on the mailing list if you received a letter or the Plymouth Generating DEIS in the mail.)

Name Jaime and Bertha Ramos

Address PO Box 169

Plymouth WA 99346

Please mail your comments by **October 15, 2002**
Benton County Planning Department
P O Box 910
Prosser, WA 99350

I-42

RESPONSE TO COMMENT I-42

A copy of the Draft EIS was mailed to the commentor and the commentor was added to the Distribution List for the Final EIS.