

Contents

Section	Page
1 Summary.....	1-1
1.1 Introduction.....	1-1
1.2 Purpose and Need for the Project.....	1-1
1.3 Description of Alternatives	1-2
1.3.1 Proposed Action	1-9
1.3.2 Impacts of Proposed Action.....	1-10
1.3.3 Alternatives Considered.....	1-12
1.3.4 Mitigation Measures	1-13
1.4 Significant Adverse Impacts	1-14
1.5 Significant Areas of Controversy or Uncertainty.....	1-15
2 Proposed Action and Alternatives	2-1
2.1 Introduction.....	2-1
2.1.1 Background	2-1
2.1.2 Project Components and Jurisdictional Overview	2-1
2.1.3 The Applicant	2-6
2.1.4 Cross-Reference Guidance Table to 463-42 WAC.....	2-6
2.1.5 List of Preparers.....	2-13
2.2 Description of the Proposed Action.....	2-14
2.2.1 Purpose and Need.....	2-15
2.2.2 Location	2-16
2.2.3 SPP Facilities	2-23
2.2.4 Construction Activities.....	2-40
2.2.5 Operation and Maintenance	2-56
2.2.6 Schedule and Workforce	2-88
2.2.7 Costs and Revenues	2-97
2.2.8 Mitigation Measures Inherent in the SPP Design.....	2-103
2.2.9 General Mitigation Measures	2-105
2.3 Description of the No Action Alternative	2-105
2.4 Alternatives to the Proposed Action.....	2-107
2.4.1 Alternative Generation Plant Locations.....	2-107
2.4.2 Northwest Site Alternative	2-108
2.4.3 Alternative Generation Plant Designs.....	2-108
2.5 Benefits or Disadvantages of Reserving SPP Approval for a Later Date.....	2-123
2.6 Pertinent Federal, State, Local, and Other Requirements	2-123
2.6.1 Federal Permit Requirements	2-126
2.6.2 State Permit Requirements.....	2-129
2.6.3 Local Permits: Columbia County	2-134
2.6.4 Other Permits.....	2-135
2.7 Coordination and Consultation with Agencies, Native American Tribes, the Public, and Nongovernmental Organizations	2-135

Section	Page
Attachments	
A Performance Data	
B Water Pipeline Memorandum	
C Certificate of Land Use Consistency	
D Tribal Letters	
3 Existing Conditions, Impacts, and Mitigation Measures.....	3.1-1
3.1 Earth.....	3.1-1
3.1.1 Existing Conditions	3.1-1
3.1.2 Environmental Impacts of the Proposed Action	3.1-16
3.1.3 Environmental Impacts of Alternatives.....	3.1-18
3.1.4 Mitigation Measures.....	3.1-19
3.1.5 Cumulative Impacts	3.1-20
3.1.6 Significant Unavoidable Adverse Impacts.....	3.1-20
3.2 Air Quality	3.2-1
3.2.1 Existing Conditions	3.2-1
3.2.2 Environmental Impacts of the Proposed Action	3.2-6
3.2.3 Environmental Impacts of Alternatives.....	3.2-14
3.2.4 Mitigation Measures.....	3.2-15
3.2.5 Cumulative Impacts	3.2-15
3.2.6 Significant Unavoidable Adverse Impacts.....	3.2-16
3.3 Water Resources	3.3-1
3.3.1 Existing Conditions	3.3-1
3.3.2 Environmental Impacts of the Proposed Action	3.3-4
3.3.3 Environmental Impacts of Alternatives.....	3.3-13
3.3.4 Mitigation Measures.....	3.3-15
3.3.5 Cumulative Impacts	3.3-17
3.3.6 Significant Unavoidable Adverse Impacts.....	3.3-17
3.4 Wetlands and Vegetation.....	3.4-1
3.4.1 Existing Conditions	3.4-1
3.4.2 Environmental Impacts of the Proposed Action	3.4-9
3.4.3 Environmental Impacts of Alternatives.....	3.4-10
3.4.4 Mitigation Measures.....	3.4-10
3.4.5 Cumulative Impacts	3.4-11
3.4.6 Significant Unavoidable Impacts.....	3.4-11
3.5 Agricultural Crops and Livestock	3.5-1
3.5.1 Existing Conditions	3.5-2
3.5.2 Environmental Impacts of the Proposed Action	3.5-2
3.5.3 Environmental Impacts of Alternatives.....	3.5-6
3.5.4 Mitigation Measures.....	3.5-7
3.5.5 Cumulative Impacts	3.5-8
3.5.6 Significant Unavoidable Adverse Impacts.....	3.5-8

Section	Page
3.6 Wildlife.....	3.6-1
3.6.1 Existing Conditions.....	3.6-1
3.6.2 Environmental Impacts of the Proposed Action.....	3.6-8
3.6.3 Environmental Impacts of Alternatives.....	3.6-11
3.6.4 Mitigation Measures.....	3.6-12
3.6.5 Cumulative Impacts.....	3.6-13
3.6.6 Significant Unavoidable Adverse Impacts.....	3.6-13
3.7 Fisheries Resources.....	3.7-1
3.7.1 Existing Conditions.....	3.7-1
3.7.2 Environmental Impacts of the Proposed Action.....	3.7-2
3.7.3 Environmental Impacts of Alternatives.....	3.7-6
3.7.4 Mitigation Measures.....	3.7-7
3.7.5 Cumulative Impacts.....	3.7-8
3.7.6 Significant Unavoidable Adverse Impacts.....	3.7-8
3.8 Energy and Natural Resources.....	3.8-1
3.8.1 Energy and Natural Resource Consumption, Rate of Use, and Efficiency.....	3.8-1
3.8.2 Energy Sources and Availability.....	3.8-4
3.8.3 Nonrenewable Resources.....	3.8-8
3.8.4 Conservation and Renewable Resources.....	3.8-9
3.9 Noise.....	3.9-1
3.9.1 Existing Conditions.....	3.9-1
3.9.2 Environmental Impacts of the Proposed Action.....	3.9-12
3.9.3 Environmental Impacts of Alternatives.....	3.9-24
3.9.4 Mitigation Measures.....	3.9-24
3.9.5 Cumulative Impacts.....	3.9-25
3.9.6 Significant Unavoidable Adverse Impacts.....	3.9-25
3.10 Land Use.....	3.10-1
3.10.1 Existing Conditions.....	3.10-1
3.10.2 Environmental Impacts of the Proposed Action.....	3.10-8
3.10.3 Environmental Impacts of Alternatives.....	3.10-9
3.10.4 Cumulative Impacts.....	3.10-10
3.10.5 Significant Unavoidable Adverse Impacts.....	3.10-10
3.11 Visual Resources/Light and Glare.....	3.11-1
3.11.1 Evaluation Methods.....	3.11-1
3.11.2 Existing Conditions.....	3.11-1
3.11.3 Environmental Impacts of the Proposed Action.....	3.11-16
3.11.4 Environmental Impacts of Alternatives.....	3.11-29
3.11.5 Mitigation Measures.....	3.11-32
3.11.6 Cumulative Impacts.....	3.11-32
3.11.7 Significant Unavoidable Adverse Impacts.....	3.11-32

Section	Page
3.12 Population, Housing, and Economics	3.12-1
3.12.1 Introduction.....	3.12-1
3.12.2 Existing Conditions	3.12-2
3.12.3 Impacts of the Proposed Action.....	3.12-12
3.12.4 Summary of Socioeconomic Impacts	3.12-24
3.12.5 Environmental Justice	3.12-24
3.12.6 Environmental Impacts of Alternatives.....	3.12-25
3.12.7 Mitigation Measures.....	3.12-25
3.12.8 Cumulative Impacts	3.12-25
3.12.9 Significant Unavoidable Adverse Impacts.....	3.12-26
3.13 Public Services and Utilities	3.13-1
3.13.1 Existing Conditions	3.13-1
3.13.2 Environmental Impacts of the Proposed Action	3.13-29
3.13.3 Environmental Impacts of Alternatives.....	3.13-35
3.13.4 Mitigation Measures.....	3.13-36
3.13.5 Cumulative Impacts	3.13-37
3.13.6 Significant Unavoidable Adverse Impacts.....	3.13-37
3.14 Cultural Resources	3.14-1
3.14.1 Existing Conditions	3.14-1
3.14.2 Environmental Impacts of the Proposed Action	3.14-9
3.14.3 Environmental Impacts of Alternatives.....	3.14-10
3.14.4 Mitigation Measures.....	3.14-11
3.14.5 Cumulative Impacts	3.14-12
3.14.6 Significant Unavoidable Adverse Impacts.....	3.14-12
3.15 Traffic and Transportation.....	3.15-1
3.15.1 Existing Conditions	3.15-1
3.15.2 Environmental Impacts of the Proposed Action	3.15-12
3.15.3 Environmental Impacts of Alternatives.....	3.15-18
3.15.4 Mitigation Measures.....	3.15-19
3.15.5 Cumulative Impacts	3.15-20
3.15.6 Significant Unavoidable Adverse Impacts.....	3.15-20
3.16 Health and Safety	3.16-1
3.16.1 WAC Requirements.....	3.16-1
3.16.2 Emergency Plan	3.16-15
3.16.3 Other Requirements	3.16-15
Attachments	
A Listed Fish and Wildlife Species	
B Certificate of Compliance—Land Use Plans and Zoning Ordinances	
4 References	4-1
5 Acronyms and Abbreviations	5-1
6 List of Preparers	6-1

Section	Page
Tables	
1.3.1	Summary of Proposed Action, Impacts, and Mitigation Measures 1-5
2.1-1	Cross-Reference Guidance Table for 463-42 WAC 2-7
2.2-1	Construction Water Usage Profile 2-51
2.2-2	Results of Criteria Pollutant Air Quality Analysis 2-62
2.2-3	Class I Ambient Air Quality Results for the Generation Plant 2-63
2.2-4	Visibility Analysis Results 2-63
2.2-5	Summary of Total Nitrogen (N) and Sulfur (S) Deposition Results 2-64
2.2-6	Results from Toxic Air Pollutants Analysis..... 2-65
2.2-7	CO ₂ Emission Rates Based on Data Provided in Table 3.2-8..... 2-66
2.2-8	Water Source Analyses..... 2-69
2.2-9	Water Mass Balance 2-70
2.2-10	Water Consumptive Use 2-73
2.2-11	Schedule for Construction and Operation (by Date) 2-88
2.2-12	Schedule For Construction And Operation (By Month)..... 2-89
2.2-13	Capital Costs, Starbuck Power Project 2-98
2.2-14	Typical EPC Breakdown 2-99
2.2-15	Estimated Sales and Use Tax 2-101
2.2-16	Impact of Property Tax Reduction on Average Household in Starbuck..... 2-102
2.3-1	No Action Alternative 2-106
2.4-1	Advantages and Disadvantages of Potential Sites 2-111
2.4-2	Comparison of Proposed Action and Other Alternatives 2-112
2.6-1	Applicable Federal, State, Local, and Other Permit Requirements..... 2-124
2.6-2	State of Washington Noise Regulations (173-60 WAC) 2-131
2.6-3	In-Use Motor Vehicle Noise Performance Standards 2-131
3.1-1	Historical Seismic Events That Have Occurred within 100 Miles of the Generation Plant Site 3.1-2
3.2-1	Ambient Air Quality Standards 3.2-5
3.2-2	PSD Ambient Air Increments 3.2-6
3.2-3	Results of Criteria Pollutant Air Quality Analysis 3.2-9
3.2-4	Class I Ambient Air Quality Results for SPP 3.2-10
3.2-5	Visibility Analysis Results 3.2-10
3.2-6	Summary of Total N and S Deposition Results 3.2-11
3.2-7	Acceptable Source Impact Analysis For Toxic Pollutants 3.2-11
3.2-8	Combustion Turbine Design and Operation Information..... 3.2-12
3.2-9	CO ₂ Emission Rates Based on Data Provided in Table 3.2-8..... 3.2-13
3.3-1	Chemical Composition: Bar-Z and Columbia County Well Water..... 3.3-7
3.6-1	Migratory Birds That Potentially Nest at the Generation Plant Site 3.6-4
3.7-1	Special-Status Fish Species Likely to Be Present in the Generation Plant and Water Pipeline Vicinity 3.7-3

Section	Page
3.8-1 1999 Natural Gas Consumption in California, Idaho, Oregon, and Washington.....	3.8-6
3.8-2 Proposed Large Gas-Fired Power Projects within BPA Service Area	3.8-7
3.9-1 Definitions of Acoustical Terms	3.9-1
3.9-2 Typical Sound Levels Measured in the Environment and Industry	3.9-3
3.9-3 State of Washington Noise Regulations (173-60-040 WAC)	3.9-4
3.9-4 Monitoring Location and Description	3.9-6
3.9-5 Summary of Hourly Measurement at M1 – Generation Plant Site January 12 through 13, 2001 (dBA)	3.9-11
3.9-6 Summary of Measurement at M2 – Boat Ramp (dBA).....	3.9-11
3.9-7 Summary of Measurement at M3 – Hatchery (dBA).....	3.9-12
3.9-8 Summary of Measurement at M4 – Campground (dBA).....	3.9-12
3.9-9 Construction Equipment and Composite Onsite Noise Levels (dBA).....	3.9-13
3.9-10 Average Construction Noise Levels at the Nearest Residential Receptor (dBA).....	3.9-14
3.9-11 Maximum Noise Levels from Common Construction Equipment and Resultant Receptor Noise Levels (dBA)	3.9-15
3.9-12 Anticipated Equipment Sound Level Specifications for Standard Packaged Equipment	3.9-19
3.9-13 Octave Band Sound Power Levels	3.9-20
3.9-14 Modeling Results	3.9-21
3.9-15 Oregon Median Octave Band Standards for Industrial and Commercial Noise Sources (OAR 340-035-0035)	3.9-23
3.9-16 Facility Sound Level at the Marina Location	3.9-23
3.11-1 Summary of Visual Resource Inventory.....	3.11-15
3.11-2 Power Plant Visual Impacts Summary	3.11-19
3.12-1 Historical and Projected Population Estimates	3.12-2
3.12-2 Demographic Breakdown of Population by Race.....	3.12-3
3.12-3 Poverty Status by County.....	3.12-4
3.12-4 Housing Units Estimate.....	3.12-5
3.12-5 1999 Employment by County.....	3.12-6
3.12-6 Major Employers in Columbia County	3.12-7
3.12-7 Unemployment Rate by County and Study Area, and for Washington State ...	3.12-8
3.12-8 Per Capita Income, 1996-1998	3.12-9
3.12-9 Assessed Property Value and Property Tax Collection in 2000.....	3.12-9
3.12-10 Taxable Retail Sales, 1996-1999	3.12-10
3.12-11 Town of Starbuck General Fund Revenues	3.12-11
3.12-12 Columbia County Tax Revenues.....	3.12-11
3.12-13 Temporary Housing Within 1 Hour of the Generation Plant Site	3.12-13
3.12-14 Central and Eastern Washington Union Halls for Crafts	3.12-18
3.12-15 Estimated Staff Needs, Generation Plant	3.12-20
3.12-16 Estimated Sales and Use Tax.....	3.12-22

Section	Page
3.12-17	Impact of Property Tax Reduction on Average Household in Starbuck..... 3.12-23
3.13-1	Law Enforcement Staff and Equipment..... 3.13-3
3.13-2	Fire Services 3.13-10
3.13-3	School Enrollment and Expansion Capacity 3.13-19
3.13-4	Parks, Recreational Facilities, and Activities within 75 Miles of the Generation Plant Site 3.13-21
3.13.5	Emergency Services for Industrial Accident: Worst-Case Scenario, 105 injured 3.13-30
3.15-1	Average Daily Traffic Volumes and Estimated Percent Trucks 3.15-2
3.15-2	2000 Conditions of Affected Roadways 3.15-7
3.15-3	Existing Unsignalized Intersection Level of Service 3.15-8
3.15-4	Accident History, January 1995 to April 2000 3.15-8
3.15-5	Existing, Future Daily, and Peak-Hour Traffic Volumes and LOS without Generation Plant..... 3.15-12
3.15-6	Total P.M. Peak Hour and LOS Construction Impacts to the Roadways..... 3.15-16
3.15-7	Estimated Truck Traffic at the Generation Plant during Operation 3.15-17
3.15-8	Existing, Future Daily, and Peak-Hour Roadway Segment Traffic Volumes and LOS with and without Generation Plant Impacts 3.15-18
3.15-9	Future Unsignalized Intersection Analysis 3.15-19
3.16-1	Compressed Gases Present during Construction 3.16-4
3.16-2	Compressed Gases Present during Operation and Maintenance 3.16-5
3.16-3	Hazardous or Toxic Materials to Be Used during Construction 3.16-9
3.16-4	Hazardous Wastes That May Be Produced during Construction..... 3.16-10
3.16-5	Hazardous or Toxic Materials to Be Used during Operation and Maintenance 3.16-12
3.16-6	General Codes and Standards 3.16-14

Figures

1.1-1	Area Map 1-3
2.1-1	Project Components 2-3
2.2-1	Vicinity Map 2-17
2.2-2	Property Boundaries 2-19
2.2-3	Property Ownership 2-21
2.2-4	Generation Plant Site Map 2-25
2.2-5	Site Arrangement 2-27
2.2-6	Computer Rendering of Generation Plant..... 2-29
2.2-7	Access Road Commercial Approach 2-35
2.2-8	Gas Piping Diagram..... 2-38
2.2-9	Transmission Tower Diagram 2-41
2.2-10	Proposed Railroad Spur 2-49

Section	Page
2.2-11 Heat Balance	2-58
2.2-12 Water Mass Balance Flow Diagram	2-71
2.2-13 Grading and Drainage	2-79
2.2-14 Total Workers Onsite Over Time.....	2-93
2.2-15 Construction Workers Onsite per Month per Job Activity	2-93
2.4-1 Alternative Generation Plant Sites	2-109
2.4-2 Water Pipeline.....	2-119
3.1-1 Seismotectonic Map: Earthquake Epicenters of Magnitude or Intensity Greater than Four.....	3.1-7
3.1-2 Seismotectonic Map: Earthquake Epicenters of Magnitude or Intensity Less than Four	3.1-9
3.1-3 Geological Cross-Section Showing the Relationship of the Gravel Bar to the Snake River Valley and the Underlying Bedrock	3.1-13
3.1-4 Grading and Drainage	3.1-21
3.2-1 Wind Speed and Direction at the Generation Plant Site	3.2-3
3.3-1 Generation Plant Floodplain Locations	3.3-5
3.3-2 Hydrogeological Cross Section.....	3.3-9
3.4-1 Map Series Index – Wetlands and Streams	3.4-3
3.5-1 Existing Agricultural Activities within 25 Miles	3.5-3
3.8-1 Demand Profile per Month	3.8-2
3.8-2 Energy Profile per Month.....	3.8-2
3.9-1 Area of Potential Noise Effect.....	3.9-7
3.9-2 Project Noise Monitoring Locations.....	3.9-9
3.9-3 A-Weighted Sound Pressure Levels.....	3.9-17
3.10-1 Land Use Plans and Zoning Ordinances within 25 Miles.....	3.10-3
3.11-1 Key Viewpoints.....	3.11-5
3.11-2 Viewpoint 1 – Lyons Ferry State Park	3.11-7
3.11-3 Viewpoint 2 – Snake River	3.11-9
3.11-4 Viewpoint 3 – Columbia County Grain Growers Grain Elevator.....	3.11-11
3.11-5 Viewpoint 4 – SR-261	3.11-13
3.11-6 Simulation 1 – Lyons Ferry State Park.....	3.11-21
3.11-7 Simulation 2 – Snake River.....	3.11-23
3.11-8 Simulation 3 – Columbia County Grain Growers Grain Elevator	3.11-25
3.11-9 Simulation 4 – SR-261	3.11-27
3.12-1 Total Workers Onsite Over Time.....	3.12-15
3.12-2 Construction Workers Onsite per Month.....	3.12-15
3.12-3 Comparison of Average Hourly Wage (2001\$) for Construction	3.12-17
3.12-4 Comparison of Average Hourly Wage (2001\$)	3.12-21
3.13-1 Fire Districts within 25 Miles	3.13-7
3.13-2 Public Services and Utilities within 50 Miles.....	3.13-13
3.13-3 Recreational Areas within 75 Miles.....	3.15-25
3.15-1 Generation Plant Site and Surrounding Roadway Network.....	3.15-3

Section	Page
3.15-2 Existing Traffic Volumes	3.15-5
3.15-3 Intersection Traffic Pattern Analysis	3.15-9
3.15-4 Heavy-Haul Transporter	3.15-15

