

TABLE OF CONTENTS

VOLUME 1 OF 4

INITIAL STATEMENT IS-1

EXHIBIT A — PROJECT DESCRIPTION A-1

A.1 Project Facilities A-1

Dam and Spillway A-5

Intake Canal A-6

Penstock Intake A-6

Penstocks A-7

Powerhouse A-7

Tailrace A-7

Access Road A-8

A.2 Impoundment A-13

A.3 Generation Equipment A-13

A.4 Power Transmission A-14

A.5 Additional Mechanical or Electrical Equipment A-14

A.6 Lands of the United States A-14

EXHIBIT B — PROJECT OPERATION AND RESOURCE UTILIZATION B-1

B.1 Alternative Sites Considered B-1

Comparison of Upstream and Downstream Sites B-2

Environmental Effects of the Alternative Sites B-4

B.2 Alternative Facility Designs, Processes and Operations Considered B-4

B.3 Plant Operation B-5

B.4 Dependable Capacity and Energy Generation B-6

Streamflow Data B-6

Storage Capacity and Rule Curve B-16

Powerplant Capacity and Efficiency B-18

Tailwater Rating Curve B-19

Powerplant Capability B-19

B.5 System and Regional Power Needs B-20

Load Information B-21

Conservation Programs B-22

Sale of Power B-24

B.6 District’s Plans for Future Development of the Project B-24

EXHIBIT C — CONSTRUCTION SCHEDULE C-1

C.1 Construction Schedule C-1

C.2 Commercial Operation Date C-3

C.3 Existing Facilities C-3

History of Project Development and Ownership C-3

Early Projects..... C-3
 Enloe Era C-4
 Historical and Remaining Project Facilities C-5

EXHIBIT D — PROJECT COSTS AND FINANCING D-1

D.1 Construction Costs D-1
 D.2 Cost of Previously Constructed Unlicensed Facilities D-3
 D.3 Compensation for takeover D-3
 D.4 Annual Cost..... D-3
 D.5 Value of Project Power D-4
 Annual Value D-4
 On Peak Value..... D-5
 Off Peak Value D-5
 Total Value of project Power D-5
 D.6 Other Electric Energy Alternatives..... D-6
 D.7 Consequences of Denial of the License Application D-7
 D.8 Sources and Extent of Financing D-8
 D.9 Cost to Develop License Application D-8
 D.10 Value of On-peak and Off-peak power D-8

EXHIBIT E — ENVIRONMENTAL REPORT

SUBPART E.1 — GENERAL DESCRIPTION OF LOCALE E.1-1

SUBPART E.2 — WATER USE AND QUALITY E.2-1

E.2.1 Introduction E.2-1
 E.2.2 Flows, Water Uses, and Project Discharges Stream Flows E.2-1
 Water Uses and Discharges E.2-3
 Water Discharges for Power Production E.2-3
 Water Rights and Water Use E.2-3
 E.2.3 Existing Impoundment Characteristics E.2-4
 E.2.4 Groundwater E.2-5
 E.2.5 Existing Water Quality E.2-6
 Water Temperature..... E.2-6
 Water Quality Standards for Temperature..... E.2-7
 2006 Temperature Monitoring Results E.2-7
 Dissolved Gas E.2-21
 Dissolved Oxygen E.2-21
 Total Dissolved Gas E.2-21
 E.2.6 Sediment Contamination E.2-24
 Sediment Quality Standards..... E.2-27
 2007 Sediment Quality Monitoring Results..... E.2-27
 Bulk Sediment Chemistry E.2-27
 Sediment Elutriate Analyses E.2-30
 Water Quality Impacts..... E.2-38
 Water Temperature E.2-38

Dissolved Oxygen	E.2-42
Total Dissolved Gases.....	E.2-42
Sediment Quality	E.2-44
E.2.7 Prevention, Mitigation & Enhancement Measures.....	E.2-45
Issue: Water Temperature	E.2-45
Potential Impact	E.2-45
Proposed PM&E WQ-01: Temperature Monitoring.....	E.2-45
Expected Outcome	E.2-45
Issue: Bypass Reach Water Quality	E.2-45
Potential Impact	E.2-45
Proposed PM&E WQ-02: Location of the Powerplant Tailrace.....	E.2-45
Expected Outcome	E.2-45
Issue: DISSOLVED OXYGEN	E.2-46
Potential Impact	E.2-46
Proposed PM&E WQ-03: Provide Aeration in Flow Tubes.....	E.2-46
Expected Outcome	E.2-46
Issue: Total Dissolved Gas	E.2-46
Potential Impact	E.2-46
Proposed PM&E WQ-04: Dissolved Gas Monitoring (TDG and DO).....	E.2-46
Expected Outcome	E.2-46
Issue: Erosion Control & Sediment Contamination	E.2-47
Potential Impact	E.2-47
Proposed PM&E WQ-05: Headworks Design.....	E.2-47
Proposed PM&E WQ-06: Erosion and Sediment Control Plan	E.2-47
Proposed PM&E WQ-07: Spill Plan	E.2-47
Proposed PM&E WQ-08: Construction Sediment Management Program	E.2-47
Expected Outcome	E.2-48
E.2.8 Summary of Consultation	E.2-48
SUBPART E.3 — FISH, WILDLIFE & BOTANICAL RESOURCES	E.3-1
E.3.1 Introduction	E.3-1
E.3.2 Fish & Aquatic Resources.....	E.3-1
E.3.2.1 Existing Conditions.....	E.3-1
Description of Project Vicinity	E.3-2
Fish Abundance and Distribution	E.3-2
Fisheries Management Framework.....	E.3-18
Fisheries Resource Management Plans	E.3-20
Threatened, Endangered and Sensitive Species in the Project Vicinity.....	E.3-22
Habitat.....	E.3-23
E.3.2.2 Impacts.....	E.3-28
Construction Impacts	E.3-28
Operational Impacts	E.3-29
Enloe Dam to Similkameen Falls Impacts.....	E.3-36
Powerhouse and Tailrace Impacts.....	E.3-37
E.3.2.3 Protection, Mitigation and Enhancement Measures	E.3-41
Issue: Sediment Impacts During Construction.....	E.3-41

Potential Impact	E.3-41
Proposed PM&E WQ-06: Erosion and Sediment Control Plan	E.3-41
Expected Outcome	E.3-42
Issue: Blasting During Construction.....	E.3-42
Potential Impact	E.3-42
Proposed PM&E FISH-01: Blasting Plan and Best Management Practices.....	E.3-42
Expected Outcome	E.3-43
Issue: Operational Impacts Upstream of the Dam – Inundation of riverine habitat	E.3-43
Potential Impact	E.3-43
Proposed PM&E FISH-02: Placement of Boulder Clusters	E.3-44
Expected Outcome	E.3-44
Issue: Operational Impacts Upstream of the Dam – trapping of Large Woody Debris	E.3-44
Potential Impact	E.3-44
Proposed PM&E FISH-03: Transport of Large Woody Debris.....	E.3-44
Expected Outcome	E.3-44
Issue: Operational Impacts at the Project Powerplant – Entrainment of Fish at the Project Intake	E.3-44
Potential Impact	E.3-45
Proposed PM&E FISH-04: Modified Intake Trashrack.....	E.3-45
Expected Outcome	E.3-45
Issue: Operational Impacts Upstream of the Dam – Loss of Fish to Reservoir Population ...	E.3-46
Potential Impact	E.3-46
Proposed PM&E FISH-05: Entrainment Studies and Fish Monitoring	E.3-46
Expected Outcome	E.3-47
Issue: Operational Impacts Upstream of the Dam – Riparian Vegetation	E.3-47
Potential Impact	E.3-47
Proposed PM&E BOTA-02: Plant Riparian Vegetation Along the Reservoir.....	E.3-47
Expected Outcome	E.3-47
Issue: Powerhouse and Tailrace Impacts.....	E.3-47
Potential Impact	E.3-47
Proposed PM&E FISH-06: Tailrace Net Barriers	E.3-48
Proposed PM&E FISH-07: Tailrace Video Monitoring	E.3-48
Expected Outcome	E.3-48
Issue: Downstream Impacts – Instream Flows.....	E.3-48
Potential Impact	E.3-48
Proposed PM&E FISH-08: Run-of-River Operations.....	E.3-48
Expected Outcome	E.3-49
Issue: Downstream Impacts – Protection of Habitat Downstream of Similkameen Falls	E.3-49
Potential Impact	E.3-49
Proposed PM&E FISH-09: Relocation of Tailrace.....	E.3-49
Expected Outcome	E.3-49
Issue: Downstream Impacts – Bypass Reach Impacts	E.3-49
Potential Impact	E.3-49
Proposed PM&Es FISH-10 and FISH-11: Fisheries Enhancement Project	E.3-49
Expected Outcome	E.3-51
Issue: Biological Review Process	E.3-52

Potential Impact	E.3-52
Proposed PM&E FISH-12: Development of the Biological Review Process	E.3-52
Proposed PM&E FISH-13: Development of a Fisheries Monitoring Data Base	E.3-52
Expected Outcome	E.3-53
E.3.2.4 Consultation Summary.....	E.3-53
E.3.3 Wildlife Resources	E.3-55
E.3.3.1 Existing Conditions.....	E.3-56
General wildlife and game Species	E.3-56
Sensitive Species.....	E.3-57
Bald Eagle	E.3-57
E.3.3.2 Impacts.....	E.3-61
E.3.3.3 Protection, Mitigation, and Enhancement Measures	E.3-65
Potential Impact	E.3-65
Proposed PM&E BOTA-03: Abandon Existing Shoreline Road and BOTA-04: Plant Riparian Species Along the Corridor	E.3-65
Proposed PM&E WILD-01: Transmission Line Pole Relocation	E.3-65
Proposed PM&E WILD-02: Construction Timing to Minimize Effects on Bald Eagles	E.3-65
Expected Outcome	E.3-65
E.3.3.4 Consultation Summary.....	E.3-65
E.3.4 Botanical Resources.....	E.3-66
E.3.4.1 Existing Conditions.....	E.3-67
Vegetation Communities.....	E.3-67
Shrub-Steppe.....	E.3-67
Upland Meadow	E.3-68
Riparian Forest	E.3-68
Riparian Shrub	E.3-73
Herbaceous Wetland.....	E.3-73
Unvegetated Habitats	E.3-73
Developed	E.3-73
Sensitive Species.....	E.3-73
Ute Ladies'-tresses.....	E.3-74
Snake River Cryptantha	E.3-74
E.3.4.2 Impacts.....	E.3-75
Access Road Construction.....	E.3-75
Powerhouse Construction	E.3-75
Powerhouse Operation.....	E.3-75
Crest Gate Operation.....	E.3-75
E.3.4.3 Protection, Enhancement, and Mitigation Measures	E.3-76
Issue: Effects of Water Elevation Changes and Sediment Management on Riparian and wetland vegetation	E.3-76
Potential Impact	E.3-76
Proposed PM&E BOTA-01: Prepare a Mitigation and Monitoring Plan.....	E.3-76
Proposed PM&E BOTA-02: Plant Riparian Vegetation	E.3-76
Proposed PM&E BOTA-03: Abandon Existing Shoreline Road and Restore Existing Road.....	E.3-77
Proposed PM&E BOTA-04: Plant Riparian Species Along Abandoned Road Corridor	E.3-77
Proposed PM&E BOTA-05: Plant Riparian Species on East and West Banks Downstream	

of Shanker’s Bend E.3-77

Proposed PM&E BOTA-06: Install grazing Control Measures E.3-77

Proposed PM&E BOTA-07: Monitor Restored Areas and Replant if Necessary E.3-77

Expected Outcome E.3-77

Issue: Disturbance of Vegetation Resulting from Construction, Road Grading and Grounds Maintenance E.3-78

Potential Impact E.3-78

Proposed PM&E BOTA-08: Employ BMPs to Protect Riparian and Wetland Vegetation..... E.3-78

Proposed PM&E BOTA-09: Environmental Training Program..... E.3-78

Proposed PM&E BOTA-10: Provide a Biological Construction Monitor E.3-78

Proposed PM&E BOTA-11: Implement a Noxious Weed Control Program..... E.3-78

Proposed PM&E WQ-06: Erosion and Sediment Control Plan E.3-80

Proposed PM&E WQ-07: Spill Plan E.3-80

Expected Outcome E.3-80

E.3.4.4 Consultation Summary..... E.3-80

SUBPART E.4 — HISTORICAL AND ARCHAEOLOGICAL RESOURCES E.4-1

E.4.1 Introduction E.4-1

Regulatory Compliance..... E.4-1

Consulting Parties (Cultural Resources Work Group) E.4-2

Historical Resources Options E.4-2

APE, Research, and Field Investigations E.4-2

E.4.2 Description of Historical Resources..... E.4-6

E.4.2.1 National Register Sites E.4-9

E.4.2.2 Impacts E.4-9

Construction Impacts E.4-10

Operation Impacts E.4-13

E.4.2.3 Protection, Mitigation & Enhancement Measures E.4-13

Issue: Enloe Dam and Powerhouse and Associated Objects and Structures..... E.4-13

Potential Impact E.4-13

Proposed PM&E HIST-01: Solicitation for Powerhouse Ownership E.4-13

Proposed PM&E HIST-02: Demolition and Site Closure..... E.4-13

Proposed PM&E HIST-03: Install Interpretive Panels..... E.4-14

Expected Outcome E.4-14

Issue: Development of Historic Properties Management Plan (HPMP)..... E.4-14

Potential Impact E.4-14

Proposed PM&E HIST-04: Review and Agreement on the Draft HPMP E.4-14

Expected Outcome E.4-14

E.4.3 Description of Archaeological Resources..... E.4-15

E.4.3.1 National Register Sites E.4-15

E.4.3.2 Impacts E.4-16

Construction Impacts E.4-17

Operation Impacts E.4-17

E.4.3.3 Protection, Mitigation & Enhancement Measures E.4-17

Issue: Archaeological Resources Along the Reservoir Shoreline..... E.4-17

Potential Impact E.4-17

Proposed PM&E ARCH-01: Conduct Monitoring of Shoreline Areas E.4-18
 Expected Outcome E.4-18
 Issue: Ground Disturbing Activities Due to Construction near NRHP-eligible Archaeological
 Sites E.4-18
 Potential Impact E.4-18
 Proposed PM&E ARCH-02: Avoid Known Eligible Sites E.4-18
 Expected Outcome E.4-18
 Issue: Archaeological Resources along the Access Road E.4-18
 Potential Impact E.4-18
 Proposed PM&E ARCH-03: Monitor Eligible Sites during Construction E.4-18
 Expected Outcome E.4-19
 Issue: Unidentified Archaeological Sites and TCPs E.4-19
 Potential Impact E.4-19
 Proposed PM&E ARCH-04: Development of an Inadvertent Discovery Plan E.4-19
 Expected Outcome E.4-19
 Issue: impacts to Archaeological Sites Due to Increased Recreation E.4-19
 Potential Impact E.4-19
 Proposed PM&E ARCH-05: Determine Potential Recreational Impacts to Archaeological
 Sites E.4-19
 Expected Outcome E.4-20
 E.4.4 Consultation Summary E.4-20

SUBPART E.5 — SOCIO-ECONOMIC IMPACTS E.5-1
 E.5.1 Introduction E.5-1
 E.5.2 Socioeconomic Impact Area E.5-1
 Labor Force and Employment E.5-1
 Unemployment E.5-2
 Population E.5-3
 Personal Income Trends E.5-5
 E.5.3 Manpower Requirements E.5-6
 Construction Payroll E.5-7
 Construction Personnel E.5-8
 E.5.4 In-migration Impacts E.5-8
 Housing E.5-9
 Displacement E.5-10
 E.5.5 Fiscal Impact Analysis E.5-10

SUBPART E.6 — GEOLOGY AND SOILS E.6-1
 E.6.1 Introduction E.6-1
 E.6.2 Geology E.6-1
 Regional Setting E.6-1
 E.6.3 Project and Geology E.6-2
 Active Mining Operations E.6-8
 E.6.4 Soils E.6-8
 E.6.5 Geologic Hazards E.6-13
 E.6.6 Project-Related Impacts E.6-14

E.6.7	Protection, Mitigation & Enhancement Measures.....	E.6-15
	Issue: Erosion May Occur During Construction	E.6-15
	Potential Impact	E.6-15
	Proposed PM&Es WQ-06: Erosion and Sediment Control Plan and WQ-08: Construction Sediment Management Program.....	E.6-15
	Expected Outcome	E.6-15
E.6.8	Consultation Summary.....	E.6-16
SUBPART E.7	— RECREATIONAL RESOURCES	E.7-1
E.7.1	Introduction	E.7-1
E.7.2	Existing Recreational Resources, Access and Use	E.7-1
	Federally-Designated Lands	E.7-1
	Existing Recreational Resources.....	E.7-2
	Recreational Resources within the Project Boundary.....	E.7-2
	Recreational Resources Outside of the Project Boundary	E.7-3
	Great Northern Railroad Corridor and Pacific Northwest Trail	E.7-4
	Greater Columbia Water Trail.....	E.7-7
	Public Access and Shoreline Buffer Zones	E.7-7
	Public Access.....	E.7-7
	Shoreline Area.....	E.7-8
	Recreational Use	E.7-9
	Existing Recreational Use	E.7-9
	Assessing Recreational Use.....	E.7-9
	Levels of Use.....	E.7-10
	Origin of Recreational Users	E.7-11
	Popular Activities in the Project Area.....	E.7-12
	Potential Recreational Use	E.7-15
E.7.3	Protection, Mitigation & Enhancement Measures.....	E.7-17
	Agency Recommendations	E.7-17
	Proposed Recreation Plan.....	E.7-18
	Issue: Road Access to Enloe Dam and Immediate Vicinity.....	E.7-19
	Potential Impact	E.7-19
	Proposed PM&E BOTA-03: Abandon Existing Shoreline Road and Restore Existing Road.....	E.7-19
	Expected Outcome	E.7-20
	Issue: Limited Public Access at Enloe Dam and Lower Impoundment.....	E.7-23
	Potential Impact	E.7-23
	Proposed PM&E REC-01: Install Barricades and Fencing to Prevent Unauthorized Access.....	E.7-23
	Expected Outcome	E.7-24
	Issue: Access to the River Corridor Below Enloe Dam (East Bank).....	E.7-24
	Potential Impact	E.7-24
	Proposed PM&E REC-02: Provide Recreation Access below Enloe Dam.....	E.7-24
	Expected Outcome	E.7-25
	Issue: Access to the River Corridor from the West Bank	E.7-25
	Potential Impact	E.7-25
	Proposed PM&E REC-03: Transfer Ownership of Trestle Bridge.....	E.7-25
	Expected Outcome	E.7-26

Issue: Displacement of Uses Due to Increase in Inundated Area and Access Restrictions.... E.7-26
 Potential Impact E.7-26
 Proposed PM&E REC-04: Improve Existing Informal Boat Ramp E.7-26
 Proposed PM&E REC-05: Clean Up and Restore Wooded Area on East Bank E.7-29
 Proposed PM&E REC-06: Develop an Interpretive Publication E.7-29
 Expected Outcome E.7-29
 Issue: Illegal Trash Dumping..... E.7-29
 Potential Impact E.7-29
 Proposed PM&E REC-07: Remove Existing Trash and Conduct Annual Cleanup E.7-29
 Expected Outcome E.7-30
 Issue: Potential Changes in Type and Intensity of Recreational Use..... E.7-30
 Potential Impact E.7-30
 Proposed PM&E REC-08: Develop Parking Area E.7-30
 Proposed PM&E REC-09: Install Picnic Tables E.7-30
 Proposed PM&E REC-10: Develop Primitive Campsites E.7-31
 Proposed PM&E REC-11: Interpretive Signs..... E.7-31
 Proposed PM&E REC-12: Information Board E.7-31
 Proposed PM&E REC-13: Recreation Management Plan E.7-31
 Expected Outcome E.7-31
 Explanation of Differences Between Proposed Recreation Plan and BLM Recommendations . E.7-32
 E.7.4 Recreation Consultation Summary E.7-33
 Background E.7-33
 Bureau of Land Management E.7-33
 National Park Service E.7-34
 Washington Department of Natural Resources E.7-34
 Washington State Interagency Committee for Outdoor Recreation E.7-35
 Okanogan County Office of Planning and Development..... E.7-35

 SUBPART E.8 — AESTHETIC RESOURCES E.8-1
 E.8.1 Introduction E.8-1
 E.8.2 Description of Existing Character E.8-2
 Visual Resources Inventory Methodology..... E.8-3
 Inventory of Enloe Dam Project Area E.8-3
 Scenic Quality Evaluation E.8-3
 Sensitivity Level Analysis E.8-4
 Delineation of Distance Zones..... E.8-4
 Visual Resources Classes and Objectives E.8-5
 Summary E.8-5
 Analysis of Enloe Dam Project Area E.8-5
 Existing Power Generation Equipment and Buildings..... E.8-5
 Project Modifications to Existing Aesthetic Resources..... E.8-6
 Specific Project Features: Landform and Water E.8-8
 VRM Objectives E.8-9
 Key Observation Points (KOPs) E.8-10
 E.8.3 Anticipated Impacts..... E.8-23
 Project Operation Impacts Upon Visual Resources..... E.8-23

Project Construction Impacts upon Visual Resources E.8-24

Contrast Rating for Project Operations E.8-24

E.8.4 Protection, Mitigation & Enhancement Measures..... E.8-25

Issue: The original Enloe powerhouse is deteriorating and has been vandalized E.8-26

Potential Impact E.8-26

Proposed PM&E AES-01: Use Visually Compatible Colors and Building Materials..... E.8-26

Proposed PM&Es BOTA-02: Plant Riparian Vegetation, BOTA-07: Monitor Restored Areas and Replant if Necessary, BOTA-08: Employ BMPs to Protect Riparian and Wetland Vegetation E.8-26

Proposed PM&E AES-02: Consult with the CCT during Restoration Activities E.8-26

Expected Outcome E.8-26

Issue: Short-term visual impacts during project Construction..... E.8-26

Potential Impact E.8-26

Proposed PM&Es AES-03: Use Non-Reflective Surfaces Where Possible during Construction, BOTA-02: Plant Riparian Vegetation, BOTA-07: Monitor Restored Areas and Replant if Necessary, BOTA- 08: Employ BMPs to Protect Riparian and Wetland Vegetation E.8-27

Expected Outcome E.8-27

Issue: Moderate visual effects to recreational users below Enloe Dam E.8-27

Project Impact..... E.8-27

Proposed PM&Es AES-01: Use Visually Compatible Colors and Building Materials, BOTA-02: Plant Riparian Vegetation, BOTA-07: Monitor Restored Areas and Replant if Necessary, BOTA-08: Employ BMPs to Protect Riparian and Wetland Vegetation E.8-27

Proposed PM&E HIST-03: Install Interpretive Panels..... E.8-27

Expected Outcome E.8-28

E.8.5 Consultation Summary..... E.8-28

SUBPART E.9 — LAND USE..... E.9-1

E.9.1 Introduction E.9-1

FERC Project Boundary E.9-1

Consulting Parties..... E.9-2

Comprehensive Plans E.9-2

E.9.2 Existing Land Use..... E.9-7

Project Vicinity E.9-7

Project Area..... E.9-7

Land Ownership..... E.9-7

Land Use E.9-11

Access..... E.9-11

Grazing E.9-11

Irrigation Withdrawal..... E.9-12

Recreation E.9-12

Wetlands E.9-12

Floodlands E.9-12

Prime and Unique Farmlands E.9-12

E.9.3 Proposed Land Use E.9-12

Hydropower Generation..... E.9-12

E.9.4	Protection, Mitigation & Enhancement Measures.....	E.9-17
	Bureau of Land Management	E.9-17
	Washington Department of Natural Resources	E.9-17
	Oroville-Tonasket Irrigation District	E.9-17
E.9.5	Consultation Summary	E.9-17
SUBPART E.10 — ALTERNATIVE ANALYSIS		E.10-1
E.10.1	Alternative Sites Considered	E.10-1
	Water Quality.....	E.10-1
	Fisheries	E.10-2
	Cultural Resources.....	E.10-2
	Recreational Resources.....	E.10-3
	Aesthetic Resources	E.10-3
E.10.2	Alternative Facility Designs, Processes, and Operations Considered.....	E.10-4
	Streamflow Downstream of Enloe Dam	E.10-7
	Water Level in Enloe Reservoir	E.10-7
	Water Quality and Fisheries.....	E.10-9
	Fisheries	E.10-9
	Riparian & Wetlands.....	E.10-9
	Cultural Resources.....	E.10-9
	Recreational Resources.....	E.10-10
	Gas-Fired Combined Cycle Equivalent Emissions.....	E.10-10
	Coal-Fired Equivalent Emissions.....	E.10-11
E.10.3	Consequences of License Denial	E.10-12
	Water Use and Quality.....	E.10-12
	Fish	E.10-12
	Botany.....	E.10-12
	Wildlife	E.10-13
	Cultural Resources.....	E.10-13
	Historical Resources	E.10-13
	Archaeological Resources.....	E.10-13
	Socio-economic Impacts	E.10-14
	Geological and Soil resources	E.10-14
	Recreational Resources.....	E.10-14
	Aesthetic Resources	E.10-15
	Land Use.....	E.10-15
SUBPART E.11 — LITERATURE CITED		E.11-1
EXHIBIT G — MAPS.....		G-1

VOLUME 2 OF 4

APPENDICES

VOLUME 3 OF 4

APPENDICES (CONTINUED)

VOLUME 4 OF 4

EXHIBIT F — DRAWINGS AND DESIGN REPORT (CONTAINS CEII – DO NOT RELEASE)

LIST OF FIGURES

Figure A-1	Project Boundary and Conceptual Design	A-3
Figure A-2	Access Road	A-11
Figure A-3	Land Ownership in Project Area	A-17
Figure A-4	Parcels Intersecting FERC Boundary (Okanogan County Assessor Parcel Numbers and BML Master Title Plat)	A-19
Figure B-1	Similkameen River Watershed	B-9
Figure B-2	Mean Monthly Flows (cfs) for the Similkameen River at Nighthawk (1929-2006) .	B-12
Figure B-3	Intra-Annual Variation in Daily Mean Flow at Nighthawk (1929-2006).....	B-12
Figure B-4	Annual Peak and Daily Mean Flow Exceedance at Enloe Dam (1911-2005)	B-13
Figure B-5	Similkameen River at Nighthawk Annual 7-Day Low (1929-2005)	B-14
Figure B-6	Similkameen River at Nighthawk Annual 7-Day Low Flow Exceedance (1929-2005)	B-15
Figure B-7	Monthly Flow Duration Curve	B-16
Figure B-8	Enloe Reservoir Area-Capacity Curve	B-17
Figure B-9	Tailwater Rating Curve	B-19
Figure B-10	Maximum Powerplant Output Capability Versus Net Hydraulic Head.....	B-20
Figure B-11	The District's Average Monthly Load	B-22
Figure B-12	Megawatt Hours Saved	B-23
Figure C-1	Enloe Project Preliminary Construction Schedule	C-2
Figure E.1-1	Project Location.....	E.1-5
Figure E.1-2	Project Boundary and Conceptual Design	E.1-7
Figure E.1-3	Project Vicinity	E.1-9
Figure E.1-4	Recreation Study Area.....	E.1-11
Figure E.2-1	Daily Maximum Temperatures at the 2006 Monitoring Locations.....	E.2-8
Figure E.2-2	The 7-DADMax Temperatures in the Lower Reservoir (RM 9.1) and the Upper Reservoir (RM 10.3).....	E.2-10
Figure E.2-3	Difference between the 7-DADMax Temperatures in the Lower Reservoir (RM 9.1) and the Upper Reservoir (RM 10.3)	E.2-11
Figure E.2-4	The 7-DADMax Temperatures Below the Waterfall and Enloe Dam	E.2-12
Figure E.2-5	Difference Between the 7-DADMax Temperatures Below the Waterfall and Enloe Dam (RM 8.8) and at the Upper Reservoir (RM 10.3)	E.2-13
Figure E.2-6	Water Temperatures at the Upper Reservoir (RM 10.3) and Lower Reservoir (RM 9.1) on July 3 and 4, 2006.....	E.2-15

Figure E.2-7 Water Temperatures at the Upper Reservoir (RM 10.3) and Lower Reservoir (RM 9.1) on August 7 and 8, 2006 E.2-16

Figure E.2-8 Daily Maximum Water Temperatures at Six Lower Similkameen River Monitoring Locations During Late July and Early August 2006 E.2-17

Figure E.2-9 The 7-DADMax Temperatures Below the Waterfall and Enloe Dam (RM 8.8) and at the Upper Reservoir (RM 10.3) During Spawning Season E.2-18

Figure E.2-10 Difference Between the 7-DADMax Temperatures Below the Waterfall and Enloe Dam (RM 8.8) and at the Upper Reservoir (RM 10.3) During Spawning Season..... E.2-19

Figure E.2-11 Mean Daily Temperatures in the Lower Reservoir (RM 9.1) and the Upper Reservoir Below Shankers Bend (RM 10.3) in July and August 2006 E.2-20

Figure E.2-12 1905 Photograph Looking Downstream Toward the Waterfalls and Original Powerhouse E.2-23

Figure E.2-13 Sediment and Water Quality Monitoring Locations E.2-25

Figure E.2-14 Freeze Core Sampling Near the Site of the New Intake Structure E.2-29

Figure E.2-15 Similkameen Sand Bar Deposit Downstream from Enloe Dam..... E.2-30

Figure E.2-16 Enloe Impoundment Bathymetry and Representative Cross-sections from Nelson (1972) E.2-33

Figure E.2-17 River 2D Flow-Direction Maps E.2-34

Figure E.2-18 Equilibrium Bed Elevations E.2-36

Figure E.2-19 The 7-DADMax Temperatures Below the Waterfall and Enloe Dam (RM 8.8) and in the Lower Reservoir (RM 9.1) in July and August 2006 E.2-41

Figure E.2-20 Enloe project power generation flows and spill for the past 11 years. E.2-44

Figure E.3-1 Anadromous Fish Distribution in the Similkameen River..... E.3-5

Figure E.3-2 Fisheries Study Area E.3-11

Figure E.3-3 Channel Gradient and elevation of the Similkameen from the base of Enloe Dam at RM 8.8 to the confluence with Okanogan at RM 0.0E..... E.3-26

Figure E.3-4 Enloe Reservoir Trophic Zones E.3-31

Figure E.3-5 Axial Velocity in Draft Tube and Tailrace Channel at 10%, 50%, and 90% Exceedence River Flows E.3-38

Figure E.3-6 Locations of Bald Eagles Observed During 2006 Surveys of the Similkameen River E.3-59

Figure E.3-7 Reservoir Inundation Zone With and Without Crest Gates E.3-63

Figure E.3-8 Vegetation in the Project Area (Map 1 of 2) E.3-69

Figure E.3-8 Vegetation in the Project Area (Map 2 of 2) E.3-71

Figure E.4-1 Project APE Map..... E.4-3

Figure E.4-2 Historical Sites Located within the Enloe Dam Licensing Project APE E.4-7

Figure E.4-3 Estimated Reservoir Inundation Zone and Location of Historical Resources E.4-11

Figure E.5-1	Per Capita Income for Okanogan County, Washington State, and the U.S.	E.5-5
Figure E.5-2	Construction Labor Force.....	E.5-7
Figure E.5-3	Construction Labor Cost.....	E.5-8
Figure E.6-1	Similkameen River Watershed.....	E.6-3
Figure E.6-2	1:100,000-Scale Geological Units.....	E.6-5
Figure E.6-3	NRCS Soil Unit.....	E.6-11
Figure E.7-1	Project Vicinity.....	E.7-5
Figure E.7-2	Access Road.....	E.7-21
Figure E.7-3	Recreation Site Plan.....	E.7-27
Figure E.8-1	Aerial Mapping with Overlay Showing Proposed Improvements and Locations of Key Observation Points (KOP).....	E.8-7
Figure E.8-2	Areas Visible from Key Observation Point 1 (Viewshed).....	8-11
Figure E.8-3	Areas Visible from Key Observation Point 2 (Viewshed).....	8-12
Figure E.8-4	Areas Visible from Key Observation Point 3 (Viewshed).....	8-13
Figure E.8-5	Areas Visible from Key Observation Point 4 (Viewshed).....	8-14
Figure E.9-1	Project Vicinity.....	E.9-5
Figure E.9-2	Land Ownership.....	E.9-9
Figure E.9-3	Reservoir Inundation Zone With and Without Crest Gates.....	E.9-15
Figure E.10-1	Reservoir Inundation Zone With and Without Crest Gates.....	E.10-5
Figure E.10-2	Projected Effect of Crest Gates on Upstream Water Levels at Enloe Dam.....	E.10-8

This page is left intentionally blank.

LIST OF TABLES

Table B-1	Characteristic Similkameen River Flows at Nighthawk.....	B-13
Table B-2	Comparison of Annual 7-Day Low Flows for Pre and Post 1974	B-14
Table B-3	Reservoir Volumes for Existing and Proposed Conditions.....	B-18
Table B-4	Enloe Hydroelectric Project Hydraulic Capacity, Plant Efficiency & Generator Output	B-18
Table B-5	Historical District Load (aMW).....	B-21
Table B-6	Projected District Load (aMW).....	B-22
Table D-1	Restoration of Enloe Hydroelectric Project Preliminary Construction Cost Estimate.....	D-2
Table D-2	Enloe Hydroelectric Project Estimated Annual Costs (2007 \$)	D-3
Table D-3	Mid-Columbia Projected Average Prices	D-5
Table D-4	Restoration of Enloe Hydroelectric Project Total Value of Project Power	D-6
Table E.2-1	Summary of Similkameen River Flows at USGS Nighthawk Station, 1929-2005	E.2-2
Table E.2-2	Similkameen River Water Rights	E.2-4
Table E.2-3	Enloe Reservoir Characteristics at Existing and Proposed Operations and Spills	E.2-5
Table E.2-4	Summary of Total Dissolved Gas Measurements Near Enloe Dam.....	E.2-22
Table E.2-5	Summary of Preliminary Enloe Dam Sediment Trace Metals Results (mg/kg)	E.2-28
Table E.2-6	Summary of Preliminary Enloe Dam Sediment Elutriate Results (µg/L).....	E.2-31
Table E.2-7	Potential Erosion and Deposition Depth, Volume, and Weight	E.2-38
Table E.3-1	Resident Fish Species Documented in the Vicinity of Enloe Dam in Three Separate Studies	E.3-3
Table E.3-2	Fish Species Collected in the Enloe Reservoir During the Summers of 2006 and 2007 (ENTRIX 2007a)	E.3-8
Table E.3-3	Relative abundance of dominant macroinvertebrate taxa collected from three sites in the Upper Similkameen River.....	E.3-9
Table E.3-4	Fish Species Observed by Reach (RM) Downstream of Enloe Dam During the Summer of 2006 (ENTRIX 2007)	E.3-13
Table E.3-5	Seasonal Activity (Phenology) of Anadromous Fish Species in the Vicinity of the Enloe Hydroelectric Project*.....	E.3-16
Table E.3-6	Seasonal Activity (Phenology) of Several Resident Fish Species with Potential Recreational or Cultural Significance in the Vicinity of the Project*	E.3-17
Table E.3-7	Estimated Non-Salmonid Survival through Proposed Turbines.....	E.3-34
Table E.3-8	Estimated Salmonid Survival through Proposed Turbines	E.3-34
Table E.3-9	Bald Eagles Observed on the Similkameen River below (-) and above (+) Enloe Dam to Palmer Lake, 2006	E.3-58

Table E.3-10	Vegetation Communities/Habitats in the Project Area	E.3-68
Table E.4-1	Inventoried Historical Resources	E.4-6
Table E.4-2	Impacts to Eligible/NRHP-Listed Historic Resources.....	E.4-10
Table E.4-3	Inventoried Archaeological Resources	E.4-15
Table E.4-4	Project Impacts Upon Eligible/NRHP Listed Archaeological Sites	E.4-16
Table E.5-1	Okanogan County Major Employers and Number of Employees (2003).....	E.5-2
Table E.5-2	Unemployment Rates	E.5-2
Table E.5-3	Population Density for Washington and Okanogan County.....	E.5-3
Table E.5-4	Population Change and Racial Composition for Washington and Okanogan County....	E.5-4
Table E.5-5	Population Change and Racial Composition for Washington, Okanogan County, and Selected Cities	E.5-4
Table E.5-6	Housing and Housing Vacancies for Okanogan County and Selected Communities within Project Impact Area	E.5-9
Table E.6-1	Lithological Units in the Vicinity of the Enloe Impoundment.....	E.6-7
Table E.6-2	Soil Units in the Vicinity of the Enloe Impoundment	E.6-10
Table E.7-1	Estimate of User Days by Month—Project Area	E.7-11
Table E.7-2	Estimate of User Days by Type of Day—Project Area	E.7-11
Table E.7-3	Similkameen River Sport Angler Steelhead Harvest	E.7-13
Table E.7-4	Estimated Future Recreation Days—Project Area.....	E.7-17
Table E.7-5	Estimated Future Overnight Visits—Project Area	E.7-17
Table E.7-6	Comparison of Proposed Recreation Plan and BLM Recommendations.....	E.7-35
Table E.8-1	Constrast Rating for Key Observation Points (KOP) Proposed Project.....	E.8-25
Table E.9-1	Ownership of Land within FERC Boundary	E.9-8
Table E.10-1	Equivalent Gas-Fire Combined Cycle Emissions	E.10-11
Table E.10-2	Equivalent Coal-Fired Emissions.....	E.10-11

LIST OF APPENDICES

VOLUME 2 OF 4 – APPENDICES

- Appendix B.1 Monthly Exceedence Charts
- Appendix D.1 Environmental Protection, Mitigation, and Enhancement Measures Summary Table
- Appendix E.2.1 Technical Memorandum for Water and Sediment Quality Study
- Appendix E.2.2 Temperature Analyses Summary
- Appendix E.2.3 Technical Memorandum for Pool Hydraulics, Sediment Balance and Sediment Transport Study
- Appendix E.3.1 Technical Memorandum for Fisheries Study
- Appendix E.3.2 Estimate of Turbine Mortality
- Appendix E.3.3 Side Channel Enhancement Investigation
- Appendix E.3.4 Technical Memorandum for Vegetation/Habitat Mapping
- Appendix E.3.5 Technical Memorandum for Riparian Vegetation Study
- Appendix E.3.6 Technical Memorandum for Special Status Plants Study
- Appendix E.3.7 Fence Plan
- Appendix E.3.8 Noxious Weed Control Plan
- Appendix E.4.1 Historic American Engineering Record

VOLUME 3 OF 4 – APPENDICES (CONTINUED)

- Appendix E.6.1 Soils Characteristics
- Appendix E.6.2 Technical Memorandum for Bank Stability and Erosion Assessment
- Appendix E.6.3 Storm Water Pollution Prevention Plan
- Appendix E.7.1 Technical Memorandum for Recreational Use Survey
- Appendix E.7.2 BLM Recommendations
- Appendix E.8.1 Technical Memorandum for Visual Resources
- Enloe DLA Comment Response Table
- Enloe DLA Comment Letters
- Distribution List

This page is left intentionally blank.