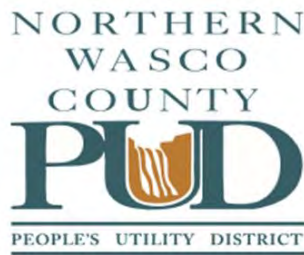


Application for Low Impact Hydropower Institute Recertification

The Dalles Dam North Fishway Hydroelectric Project (FERC Project #P-7076, LIHI Project #71)



Submitted by:
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1.0 Project Description

1.1 Introduction

This application is provided to the Low Impact Hydro Institute (LIHI) for consideration of the recertification of The Dalles Dam North Shore Fishway Hydroelectric Project (the Project) for Low Impact Hydro Status. No changes in facility requirements, obligations, agreements or compliance violations have occurred since the last LIHI certification.

1.2 Location

The Project is located on the Columbia River at river mile 191.5, in Klickitat County Washington, near the town of Dallesport. It is owned and operated by Northern Wasco County People's Utility District (NWCPUD) and is situated on the north shore of the US Army Corps of Engineers' (Corps) The Dalles Dam. The Dalles Dam is a concrete-gravity run of the river dam (Figure 1). NWCPUD's Project is a conduit facility of the larger dam that generates power with the auxiliary water supply for the fish ladder located on the north shore.



1. Proximity of NWCPUD's Northshore Fishway Project Relative to the Corps of Engineer's Project, The Dalles Dam.

The main stem of the Columbia River supports 14 dams, 3 in Canada and 11 in the United States. The four lower dams on the Columbia (Bonneville, The Dalles, John Day, and McNary) and four lower dams on the Snake River, incorporate navigation locks to allow ship and barge traffic from the ocean upriver as far as Richland, Washington and Lewiston, Idaho (Figure 2).



Figure 2. Location of US Army Corps of Engineers, The Dalles Dam on the Columbia River

1.3 Zone of Effect

The Project Zone of Effect (ZoE) encompasses an area of approximately 5.7 acres and consists of the hydroelectric project, related structures and appurtenant structures associated with a fish bypass system. The ZoE begins immediately downstream of the Corp's intake trash racks of the auxiliary water for the North Fish Ladder to the outflow of the fish bypass pipe at the fish ladder entrance. The ZoE does not include any upstream or downstream waters since the Project generates with water originating and exiting from the Corps Auxiliary Water Supply System (AWSS) and does not regulate flow or impound water.

Generation Facilities in the ZoE

The overall length of generation facilities from the intake to outfall is approximately 330-feet. Structures within the ZoE associated with generation, include a 210 foot-long, 20 foot-wide rectangular concrete intake channel that connects the auxiliary water supply system to the North Shore fish ladder, (Figure 3). Water is conveyed into a 10 foot diameter, 85 foot-long steel penstock into the generating unit, installed with a generating capacity of 4.9 megawatts (MW) at a design head of 80 feet and a hydraulic capacity of 800 cfs. The generator is located inside the powerhouse, a 35 foot by 64 foot building located near the fish ladder. The energy is transmitted via a three-mile-long, 12.5 kilovolt (kV) transmission line.



Figure 1. The Dalles Dam North Shore Fishway Project Zone of Effect.

Fish Bypass Facilities in the ZoE

The overall length of the fish bypass facilities from the intake to outfall is approximately 1,410 feet. Associated structures include a 210 foot-long intake structure, within which is a 150 foot screened dewatering structure that separates the juvenile fish from the unit's penstock flow. Then, under normal operating conditions, the bypassed flows goes into a 1,200 foot juvenile fish pipe that carries the flow and bypassed fish to its exit 30 feet downstream from the fish ladder entrance (Figure 4). During sampling periods, flow is diverted from the bypass pipe into a fish sampling weir pool to evaluate the number and condition of fish being bypassed.

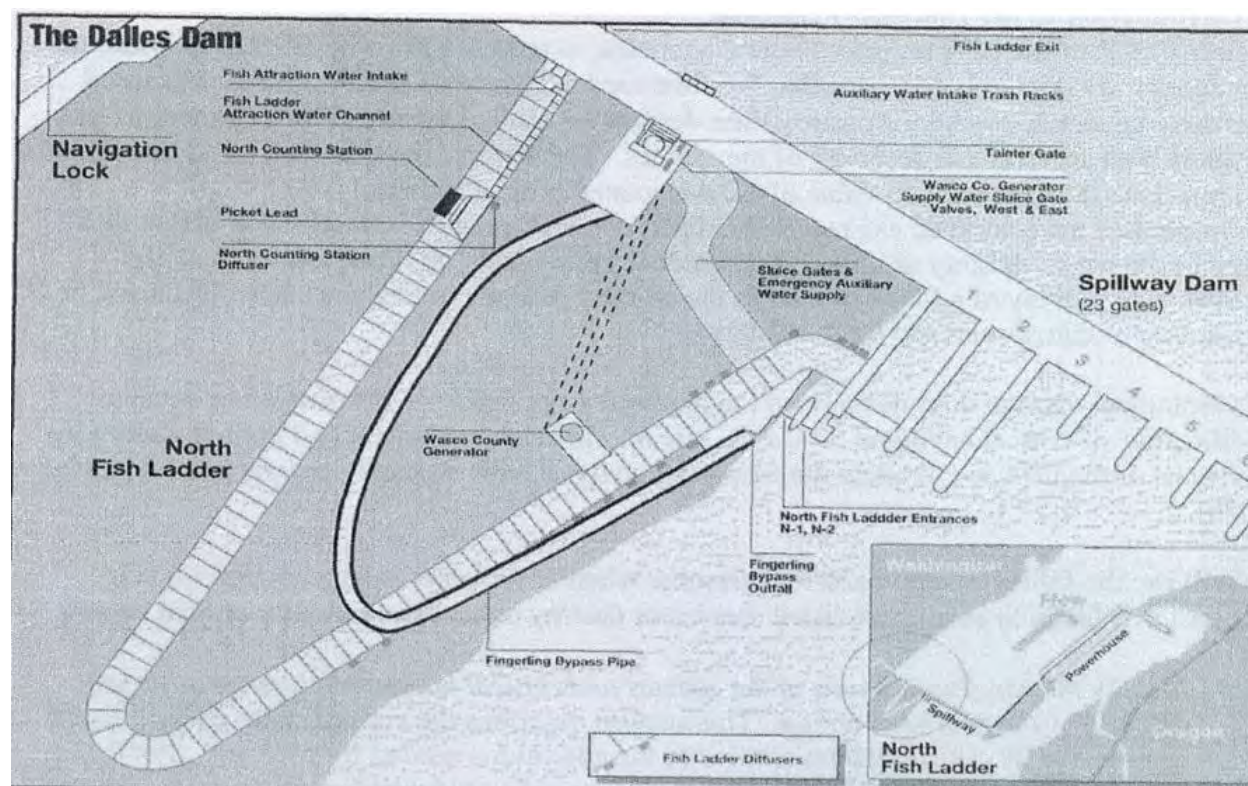


Figure 2. Structures within The Dalles North Shore Fishway Project Zone of Effect.

1.4 Project History

The Corps federal hydroelectric project at The Dalles Dam is operated as part of the Federal Columbia River Power System; the powerhouse contains 22 units, 14 of which became operational in 1960 and the remaining 8 units in November 1973. The maximum installed capacity of the units is 2,100 MW with an operating head of about 80 feet.

On December 31, 1987, the Federal Energy Regulatory Commission (FERC) issued the Northern Wasco County People's Utility District a 50-year license for the project, located within the AWSS of the Corp's north shore fish ladder (P-7076). The Project was initially licensed for a maximum installed capacity of 4.2 MW but on November 8, 1989, an amended FERC license was issued to allow for 0.7 MW of additional generating capacity (4.9 MW total), in compliance with Article 312 of the license. It first produced commercial power on May 28, 1991.

On April 21, 2011, the Project was originally certified by LIHI as the "North Shore Fishway Hydroelectric Project. – LIHI Certification NO. 71", effective July 17, 2010, for a term of five years ending on July 17, 2015. The project was recertified again in 2015 for another term of five years and will expire on December 31, 2020. In the period since the last certification, no major project changes or compliance deviations have occurred.

1.5 Project Operations

The Project was built to utilize the Corp's North Shore fishway auxiliary water supply (AWSS). The purpose of which, is to supplement the fish ladder's operating flow of 70 cfs, with additional flow to provide a total attraction flow of 800 cfs at the entrance to the ladder. The Project is a component of the AWSS and does not independently regulate flow. Prior to the Project's construction, the supplemental flow dropped into a plunge pool and then discharged into the fish ladder entrance area, where it combined with the fish ladder operating flow.

Water enters the AWSS after passing through a trash rack; the trash rack has 7/8 inch bar spacing to prevent the passage of larger fish and debris into the 150 foot long intake structure. The structure contains a wall of stainless-steel wedge wire screen panels. The screens have 1/8 inch openings to exclude juvenile fish and admit only the water used for generation. The overall surface area of the screens is enough to limit the approach velocities and prevent impingement. A small amount of flow containing the excluded fish discharges through an adjustable weir at the end of the building, dropping about six feet into a 12 foot-deep concrete basin, and then entering a 16 inch-diameter, 1,200 foot-long pipe that conveys the fish to the fishway entrance area. A 10 foot diameter, 85 foot long penstock carries generation flows from the intake structure to the powerhouse, which is situated adjacent to the lower end of the fishway.

As stipulated in the FERC license, a period of fish sampling occurs annually to determine the performance of the fish bypass system. The success of the system is based on the condition of the fish sampled. Annual reports include sampling activities for that year and summaries of the previous year's data. The objective being to summarize the results of the fish sampling, both in quantity and quality of fish, relate that to performance of the bypass system, and to suggest improvements.

1.6 Project Facility Information

Table 1. Facility Information (LIHI Table B 1.1.)

| Item | Information Requested | Response (include references to further details) |
|-----------------------------|---|--|
| Name of the Facility | Facility name (use FERC project name or other legal name) | The Dalles Dam North Shore Fishway Project (The Project). |
| Location | River name (USGS proper name) | The Columbia River. |
| | Watershed name (select region, click on the area of interest until the 8-digit HUC number appears. Then identify watershed name and HUC-8 number from the map at: https://water.usgs.gov/wsc/map_index.html) | Middle Columbia-Hood HUC #17070105. |
| | Nearest town(s), county(ies), and state(s) to dam | Dallesport, Klickitat County, Washington |
| | River mile of dam | 191.5 |
| | Geographic latitude of dam | 45.6144 degrees North |
| | Geographic longitude of dam | -121.1361 degrees South |
| Facility Owner | Application contact names (Complete the Contact Form in Section B-4 also): | Kurt Conger, Assistant General Manager Derrick Mauritsen, Operator NSFP Koreenna Colquitt, Power Resources Coordinator |
| | Facility owner company and authorized owner representative name. For recertifications: If ownership has changed since last certification, provide the date of the change. | Northern Wasco County People's Utility District. No changes since last certification. |
| | FERC licensee company name (if different from owner) | Same as owner. |
| Regulatory Status | FERC Project Number (e.g., P-xxxxx), issuance and expiration dates, or date of exemption | P-7076 Issued December 31, 1987 Expiration November 30, 2037 |
| | FERC license type (major, minor, exemption) or special classification (e.g., "qualified conduit", "non-jurisdictional") | Major |
| | Water Quality Certificate identifier, issuance date, and issuing agency name. Include information on amendments. | As a conduit facility, the project is not subject to a water quality certification. |

| <i>Item</i> | <i>Information Requested</i> | <i>Response (include references to further details)</i> |
|--------------------------------|---|---|
| | Hyperlinks to key electronic records on FERC e-library website or other publicly accessible data repositories ¹ | See supporting documents attached in Appendix A: A.1 FERC License A.2 Environmental Assessment A.3 NMFS Biological Opinion |
| <i>Powerhouse</i> | Date of initial operation (past or future for pre-operational applications) | May 28, 1991 |
| | Total installed capacity (MW) For recertifications: Indicate if installed capacity has changed since last certification | 4.9 MW; No change since last certification. |
| | Average annual generation (MWh) and period of record used For recertifications: Indicate if average annual generation has changed since last certification | 40,000 MWh (Period of record 2013-current); No change since last certification. |
| | <u>Mode of operation</u> (run-of-river, peaking, pulsing, seasonal storage, diversion, etc.) For recertifications: Indicate if mode of operation has changed since last certification | Conduit Facility; No change since last certification. |
| | Number, type, and size of turbines, including maximum and minimum hydraulic capacity of each unit | One, HLD74-LJ-200 vertical shaft Francis-type turbine. The minimum and maximum hydraulic capacity is approximately 700-800 cfs which allows the turbine to produce between 5 and 5.5 MW at approximately 80 feet of net head. |
| | Trashrack clear spacing (inches), for each trashrack | Intake rack: ¾ inch bars with spacing of 7/8-inches |
| | Dates and types of major equipment upgrades | None. |
| | Dates, purpose, and type of any recent operational changes | None. |
| | Plans, authorization, and regulatory activities for any facility upgrades or license or exemption amendments | None. |
| <i>Dam or Diversion</i> | Date of original construction and description and dates of subsequent dam or diversion structure modifications | The Corps Dalles Dam construction was completed in 1957. The Dalles North Fishway Hydroelectric Project produced its first commercial power on May 28, 1991. |

| <i>Item</i> | <i>Information Requested</i> | <i>Response (include references to further details)</i> |
|----------------------------------|---|--|
| | Dam or diversion structure height including separately, the height of any flashboards, inflatable dams, etc. | Not applicable for a conduit facility. The Dalles Dam is 200 feet high. |
| | Spillway elevation and hydraulic capacity | Not Applicable for a conduit facility. The Dalles Dam spillway has 23 tainter gates and maximum hydraulic capacity of 2,290,000 cfs. |
| | Tailwater elevation (provide normal range if available) | Tailwater elevation normal range is 69.5 feet to 72.5 feet. |
| | Length and type of all penstocks and water conveyance structures between the impoundment and powerhouse | 10-foot diameter, 85 foot long steel penstock; 150 foot long, 20 foot wide rectangular concrete intake channel that is connected to the auxiliary water supply system to the North Fishway fish ladder of the Corps Dalles Dam |
| | Dates and types of major infrastructure changes | None. |
| | Designated facility purposes (e.g., power, navigation, flood control, water supply, etc.) | Power. |
| | Source water | Lower Columbia River. |
| | Receiving water and location of discharge | Receiving and discharge location are both from/to the auxiliary water supply system of the Corp's Northshore fishway. |
| <i>Conduit</i> | Date of conduit construction and primary purpose of conduit | Conduit construction completed May 28, 1991, with the purpose of generating power for Northern Wasco County PUD to use power locally. |
| <i>Impoundment and Watershed</i> | Authorized maximum and minimum water surface elevations For recertifications: Indicate if these values have changed since last certification | Not applicable as a conduit facility. Has not changed since last certification. Max and min wsl of The Dalles Dam pool is 155 and 182.3 msl, respectively. |
| | Normal operating elevations and normal fluctuation range For recertifications: Indicate if these values have changed since last certification | Not applicable as a conduit facility. Has not changed since last certification. Water surface elevations of The Dalles Dam pool range from elevation 155 to 160 msl. |
| | Gross storage volume and surface area at full pool For recertifications: Indicate if these values have changed since last certification | Not applicable as a conduit facility. Has not changed since last certification. The Dalles Dam pool volume is 330,000 acre-feet. |

| Item | Information Requested | Response (include references to further details) | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------|---|---|-------|-----------------|---|---------|---|---------|---|---------|---|---------|---|---------|---|---------|---|---------|---|---------|---|---------|----|---------|----|---------|----|
| | Usable storage volume and surface area For recertifications: Indicate if these values have changed since last certification | Not applicable as a conduit facility. Has not changed since last certification. Usable storage for The Dalles Dam Project is 52, 500 acre-feet. | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Describe requirements related to impoundment inflow, outflow, up/down ramping and refill rate restrictions. | Not applicable for conduit facility as the project does not directly regulate flow. | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Upstream dams by name, ownership and river mile. If FERC licensed or exempt, please provide FERC Project number of these dams. Indicate which upstream dams have downstream fish passage. | John Day Dam; owned by the U.S. Army Corps of engineers. This dam is exempt from FERC licensing and is located at River Mile 216. The John Day Dam has downstream fish passage. | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Downstream dams by name, ownership, river mile and FERC number if FERC licensed or exempt. Indicate which downstream dams have upstream fish passage | Bonneville Dam; owned by The U.S. Army Corps of engineers. This dam is exempt from FERC licensing and is located at river mile 146. This dam has a downstream fish passage. | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Operating agreements with upstream or downstream facilities that affect water availability and facility operation | NWCPUD operates NSFP according to a revised agreement for Operation and Maintenance dated January 31, 2017. | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Area of land (acres) and area of water (acres) inside FERC project boundary or under facility control. | 5.7 acres | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hydrologic Setting | Average annual flow at the dam, and period of record (POR) used | NA for conduit facility. Average Annual flow at The Dalles Dam USGS Gage 14105700 POR:1989-2019 ~ 179,176 cfs. | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Average monthly flows and period of record used | NA for conduit facility. Monthly Average Flows at The Dalles Dam, USGS Gage 14105700 for 1989-2019: | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | <table><tr><th>Month</th><th>Avg. Flow (cfs)</th></tr><tr><td>1</td><td>168,830</td></tr><tr><td>2</td><td>175,463</td></tr><tr><td>3</td><td>187,400</td></tr><tr><td>4</td><td>226,477</td></tr><tr><td>5</td><td>286,590</td></tr><tr><td>6</td><td>280,423</td></tr><tr><td>7</td><td>189,376</td></tr><tr><td>8</td><td>142,148</td></tr><tr><td>9</td><td>104,466</td></tr><tr><td>20</td><td>107,531</td></tr><tr><td>11</td><td>128,587</td></tr><tr><td>12</td><td>151,018</td></tr></table> | Month | Avg. Flow (cfs) | 1 | 168,830 | 2 | 175,463 | 3 | 187,400 | 4 | 226,477 | 5 | 286,590 | 6 | 280,423 | 7 | 189,376 | 8 | 142,148 | 9 | 104,466 | 20 | 107,531 | 11 | 128,587 | 12 |
| Month | Avg. Flow (cfs) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 168,830 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 175,463 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 187,400 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 226,477 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 286,590 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 280,423 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | 189,376 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 142,148 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | 104,466 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | 107,531 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | 128,587 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | 151,018 | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Item | Information Requested | Response (include references to further details) |
|---|---|--|
| | Location and name of closest stream gauging stations above and below the facility | NA for conduit facility. From The Dalles Dam; Upstream Gage: John Day Dam USGS Gage 14046500 Downstream Gage: Bonneville Dam USGS Gage 14128870 |
| | Watershed area at the dam (in square miles). Identify if this value is prorated and provide the basis for proration. | NA for conduit facility; Watershed area at The Dalles Dam = 129 square miles. |
| Designated Zones of Effect | Number of zones of effect | One. |
| | Upstream and downstream locations by river miles | NA for conduit facility |
| | Type of waterbody (river, impoundment, bypassed reach, etc.) | NA for conduit facility |
| | Delimiting structures or features | Length from intake to outfall: 1. Generation facilities – 330-feet 2. Fish bypass facilities – 1,410-feet |
| | Designated uses by state water quality agency | Hydropower is a designated beneficial use for the Columbia River at RM 191.5. https://www.oregon.gov/deq/Rulemaking/Docs/table101a.pdf |
| Pre-Operational Facilities | | |
| Expected operational date | Date generation is expected to begin | Not applicable. |
| Dam, diversion structure or conduit modification | Description of modifications made to a pre-existing conduit, dam or diversion structure needed to accommodate facility generation. This includes installation of flashboards or raising the flashboard height. Date the modification is expected to be completed | Not applicable. |
| Change in water flow regime | Description of any change in impoundment levels, water flows or operations required for new generation | Not applicable. |

2.0 Certification Standards

Table 2. Standards Matrix (LIHI Table B-1.2.a)

Facility Name: The Dalles Dam North Shore Fishway Project

Zone of Effect: Conduit

| Criterion | | Alternative Standards | | | | |
|-----------|--|-----------------------|---|---|---|------|
| | | 1 | 2 | 3 | 4 | Plus |
| A | Ecological Flow Regimes | ✓ | | | | |
| B | Water Quality | ✓ | | | | |
| C | Upstream Fish Passage | ✓ | | | | |
| D | Downstream Fish Passage | | ✓ | | | |
| E | Watershed and Shoreline Protection | ✓ | | | | |
| F | Threatened and Endangered Species Protection | | ✓ | | | |
| G | Cultural and Historic Resources Protection | ✓ | | | | |
| H | Recreational Resources | ✓ | | | | |

2.1 Criterion A – Ecological Flow Regime

Deviations associated with flow regime compliance are not applicable to the NSFP since it is a conduit facility and does not independently regulate flow. Overall flow management at The Dalles Dam is the responsibility of the Corps.

Table 3. Ecological Flows (LIHI Table B 2).

| Criterion | Standard | Instructions |
|-----------|----------|--|
| A | 1 | <p><u>Not Applicable / De Minimis Effect:</u> In a conduit facility, identify the source waters, location of discharge points, and receiving waters for the conduit system within which the hydropower facility is located. This standard cannot be used for conduits that discharge to a natural waterbody.</p> <p>The Dalles Dam North Shore Fishway is a conduit facility. It generates with water originating from and exiting to the Corp's AWSS and does not independently regulate flow. The AWSS draws about 800 cfs from the The Dalles Dam forebay to supply the Corp's North Shore fish ladder and to provide attraction water near the ladder entrance. The Project uses the water from the AWSS for generation and returns it to the AWSS before it is discharged for fish attraction water at the ladder entrance. The Project uses a very small portion (approximately 10-12 cfs of 800 cfs) of the AWSS flow to operate the fish bypass system that screens fish from the penstock flow. The bypassed water is discharged about 30 feet downstream of the fish ladder entrance.</p> |

2.2 Criterion B – Water Quality

As a conduit facility, the Project is located on a Water Quality Limited river reach is not applicable, however, the Dalles Dam and Bonneville Dam Pools (Lower Columbia River) are listed on the Washington Department of Ecology's Section 303(d) list of impaired waters.

Table 4. Water Quality (LIHI Table B-3).

| Criterion | Standard | Instructions |
|-----------|----------|--|
| B | 1 | <p><u>Not Applicable / De Minimis Effect:</u></p> <p>If facility is located on a <u>Water Quality Limited</u> river reach, provide a link to the state's most recent impaired waters list and indicate the page(s) therein that apply to facility waters. If possible, provide an agency letter stating that the facility is not a cause of such limitation. Explain the rationale for why the facility does not alter water quality characteristics below, around, and above the facility.</p> <p>As a conduit facility, the Project is not located on a water quality limited river reach per se, but rather within the Corp's AWSS. However, the site of The Dalles Dam on the Lower Columbia (and The Dalles Dam and Bonneville Pools) are listed on the States 303(d) list for Temperature, TDG, Dioxin, Dissolved Oxygen, pH and Bacteria exceedances.</p> <p>Since the portion of flow used by the Project relative to the Lower Columbia River (less than 0.5%) and since it is a conduit facility, FERC issued Order 464 during the licensing process which effectively waived certification by the State under Section 401 of the federal Clean Water Act.</p> |

2.3 Criterion C – Upstream Fish Passage

The species of migratory fish that occur now or have occurred historically at the facility are Sockeye (*Oncorhynchus nerka*), Coho (*Oncorhynchus kisutch*), Chinook (*Oncorhynchus tshawytscha*), Steelhead (*Oncorhynchus mykiss*), White Sturgeon (*Acipenser transmontanus*), Chum (*Oncorhynchus keta*) and Pacific Lamprey (*Entosphenus tridentatus*).

Table 4. Upstream Fish Passage (LIHI Table B-4)

| Criterion | Standard | Instructions |
|-----------|----------|---|
| C | 1 | <p><u>Not Applicable / De Minimis Effect:</u> Explain why the facility does not impose a barrier to upstream fish passage in the designated zone. Typically, impoundment zones will qualify for this standard since once above a dam and in an impoundment, there is no facility barrier to further upstream movement.</p> <p>The facility does not impose a barrier to upstream fish passage because it is a conduit facility located wholly within the impoundment of the AWSS; there is no fish access to the turbine flow. The Dalles Dam is part of the critical migratory habitat under the Endangered Species Act for upstream passage. As such, the site is subject to a National Marine Fisheries Service Biological Opinion and provides several mitigating measures for upstream fish passage including fish ladders, fish friendly flow regimes, etc.</p> |

2.4 Criterion D – Downstream Fish Passage

The riverine fish species that occur now or have occurred historically at the facility are, Crappie spp. (*Pomoxis* spp.), Bullhead spp. (*Ameiurus* spp.), Bluegill (*Lepomis macrochirus*), Lamprey (*Entosphenus tridentatus*), - ammocoete Lamprey (*Entosphenus tridentatus*), Yellow Perch (*Perca flavescens*), Sculpin spp. (*Cottus* spp.), Sucker spp. (*Catostomus* spp.), Banded Killifish (*Fundulus diaphanous*), Walleye (*Sander vitreus*), Northern Pikeminnow (*Ptychocheilus oregonensis*), Mountain Whitefish (*Prosopium williamsoni*), Bass (*Micropterus* spp.), American Shad (*Alosa sapidissima*), Peamouth (*Mylocheilus caurinus*), and Siberian Prawn (*Exopalaemon modestus*).

Table 5. Support Downstream Fish Passage (LIHI Table B-5)

| Criterion | Standard | Instructions |
|-----------|----------|---|
| D | 2 | <p><u>Agency Recommendation:</u> Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally protective).</p> <p>Per Article 402 of FERC license P-7076 for the Project, NWCPUD was required to consult, design and build downstream fish passage consisting of fish screens and associated bypass conveyance facilities. A fish sampling and monitoring program is required under license Article 403. FERC issued an order approving the plans on May 23, 1990. Beginning in 1994 and continuing until December 2006, NMFS issued Section 10 Endangered Species Act (ESA) permits for the sampling activities. In 2006, while reviewing the Section 10 permit application for the 2007 sampling season, NMFS concluded that the Section 10 permit should be obtained through a Section 7 consultation process. This required preparation of a biological assessment, which FERC filed with NMFS by letter dated January 31, 2008, requesting formal consultation under Section 7. On December 19, 2011, the National Marine Fisheries Service issued an Endangered Species Act Biological Opinion, Incidental Take Statement for the NSFP and concluded that no further mitigation action was necessary beyond what was required in the FERC license.</p> <p>Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is part of a Settlement Agreement or not.</p> <p>The following is a table from the NMFS Biological Opinion, dated December 19, 2011, which concludes that the proposed action (operation of the turbine) “is not likely to jeopardize the continued existence of the endangered species present.” due to the de minimis take (<1%) associated with the migratory runs at The Dalles Dam.</p> |

| | | <p>Table 13. Proportion of total population with allowed take numbers in Table 12.</p> <table border="1"> <thead> <tr> <th>ESU totals</th><th>Number of mortalities and injuries</th><th>percent of ESU run at The Dalles</th></tr> </thead> <tbody> <tr> <td colspan="3">yearling Chinook</td></tr> <tr> <td>SNAKE RIVER</td><td>8</td><td>1.94E-05</td></tr> <tr> <td>Snake River Spring/Summer</td><td>53</td><td>8.63E-05</td></tr> <tr> <td>Snake River Fall</td><td>7</td><td>1.98E-05</td></tr> <tr> <td>Upper Columbia River</td><td></td><td></td></tr> <tr> <td colspan="3">Subyearling Chinook</td></tr> <tr> <td>Snake River Fall</td><td>53</td><td>0.00034</td></tr> <tr> <td colspan="3">Steelhead</td></tr> <tr> <td>SNAKE RIVER STEELHEAD</td><td>3</td><td>1.71E-07</td></tr> <tr> <td>Upper Columbia River</td><td>26</td><td>7.64E-07</td></tr> <tr> <td>Middle Columbia River</td><td>7</td><td>1.17E-07</td></tr> <tr> <td colspan="3">Sockeye</td></tr> <tr> <td>SNAKE RIVER SOCKEYE</td><td>1</td><td>0.00023</td></tr> </tbody> </table> <p>The level of take is less than one percent of the average total runs from 2006 through 2010.</p> <p>Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented.</p> <p>Article 403 of the FERC license for the Project requires annual sampling to determine the condition of the bypassed fish, which ultimately determines the success of the bypass facility. Sampling occurs during the middle 80% of the downstream migration season (April-July) for one 24-hour period each week. Data is collected and reported to state and federal agencies and includes sample totals by species, descaling and mortality information, and operational conditions at the time data was collected.</p> | ESU totals | Number of mortalities and injuries | percent of ESU run at The Dalles | yearling Chinook | | | SNAKE RIVER | 8 | 1.94E-05 | Snake River Spring/Summer | 53 | 8.63E-05 | Snake River Fall | 7 | 1.98E-05 | Upper Columbia River | | | Subyearling Chinook | | | Snake River Fall | 53 | 0.00034 | Steelhead | | | SNAKE RIVER STEELHEAD | 3 | 1.71E-07 | Upper Columbia River | 26 | 7.64E-07 | Middle Columbia River | 7 | 1.17E-07 | Sockeye | | | SNAKE RIVER SOCKEYE | 1 | 0.00023 |
|---------------------------|------------------------------------|---|------------|------------------------------------|----------------------------------|------------------|--|--|-------------|---|----------|---------------------------|----|----------|------------------|---|----------|----------------------|--|--|---------------------|--|--|------------------|----|---------|-----------|--|--|-----------------------|---|----------|----------------------|----|----------|-----------------------|---|----------|---------|--|--|---------------------|---|---------|
| ESU totals | Number of mortalities and injuries | percent of ESU run at The Dalles | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| yearling Chinook | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SNAKE RIVER | 8 | 1.94E-05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Snake River Spring/Summer | 53 | 8.63E-05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Snake River Fall | 7 | 1.98E-05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Upper Columbia River | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Subyearling Chinook | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Snake River Fall | 53 | 0.00034 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Steelhead | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SNAKE RIVER STEELHEAD | 3 | 1.71E-07 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Upper Columbia River | 26 | 7.64E-07 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Middle Columbia River | 7 | 1.17E-07 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sockeye | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SNAKE RIVER SOCKEYE | 1 | 0.00023 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D | PLUS | <p><u>Bonus Activities:</u></p> <p>NWCPUD maintains a presence on the Fish Passage Operations & Maintenance (FPOM) Working group in the spirit of cooperation with The Dalles Dam Corps requirement to abide by the Fish Passage Plan that is implemented by the FPOM and required per the Biological Opinion for the Federal Columbia Power System.</p> <p>http://pweb.crohms.org/tmt/documents/fpp/2018/final/FPP18_FINAL.pdf</p> <p>○</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

2.5 Criterion E – Shoreline and Watershed Protection

Table 6. Shoreline and Watershed Protection (LIHI Table B-6)

| Criterion | Standard | Instructions |
|-----------|----------|--|
| E | 1 | <p><u>Not Applicable / De Minimis Effect:</u> If there are no lands with significant ecological value associated with the facility, document and justify this (e.g., describe the land use and land cover within the FERC project or facility boundary).</p> <p>Since this is a conduit facility and is not responsible for any impoundment, they are not responsible for a buffer zone of any kind; there are no lands with ecological value associated with the facility. NWCPUD has no responsibility for the management of The Dalles Dam or Bonneville Dam pools' shoreline.</p> |

2.6 Criterion F – Threatened and Endangered Species Protection

Table 7. Threatened and Endangered Species (LIHI Table B-7)

| Criterion | Standard | Instructions |
|-----------|----------|--|
| F | 2 | <p><u>Finding of No Negative Effects:</u> Identify all federal and state listed species in the facility area based on current data from the appropriate state and federal natural resource management agencies.</p> <p>Listed species present in the facility area include: Snake River fall Chinook salmon, Snake River spring/summer Chinook salmon, Upper Columbia River spring Chinook salmon, Snake River sockeye salmon, Snake River steelhead, Upper Columbia River steelhead, and Middle Columbia River steelhead.</p> <p>Provide documentation that there is no demonstrable negative effect of the facility on any listed species in the area from an appropriate natural resource management agency or provide documentation that habitat for the species does not exist within the ZoE or is not impacted by facility operations.</p> <p>Citing section 2.7 Conclusion, of the Biological Opinion issued on December 19, 2011, “After reviewing the current status of the listed species, the environmental baseline within the action area, the effects of the proposed action, and cumulative effects, is NMFS’ biological opinion that the proposed action is not likely to jeopardize the continued existence of the listed species present.” Also see Section 2.4 Criterion D -Downstream Passage for more information.</p> |

2.7 Criterion G – Cultural and Historic Resource Protection

Table 8. Cultural and Historic Resources (LIHI Table B-8)

| Criterion | Standard | Instructions |
|-----------|----------|---|
| G | 1 | <p><u>Not Applicable / De Minimis Effect:</u> Document that there are no cultural or historic resources located on facility lands that can be affected by construction or operations of the facility. Document that the facility construction and operation have not in the past, nor currently adversely affect any cultural or historic resources that are present on facility lands.</p> <p>A cultural resource evaluation was conducted for the Corps of Engineers as part of the original construction of the Project with no significant findings. This result was later confirmed in a letter from the State of Washington Department of Archaeology & Historic Preservation on December 8, 2010 that concluded “We concur with the proposed determination of No Historic Properties Affected.” See letter attached in Appendix A.4.</p> |

2.8 Criterion H – Recreational Resources

Table 9. Recreational Resources (LIHI Table B-9).

| Criterion | Standard | Instructions |
|-----------|----------|--|
| H | 1 | <p><u>Not Applicable / De Minimis Effect:</u> Document that the facility does not occupy lands or waters to which public access can be granted and that the facility does not otherwise impact recreational opportunities in the facility area.</p> <p>The entire facility is located inside the fenced perimeter of The Dalles Dam operated by the Corps of Engineers. There is no public access to the project. Further, on May 27, 2015, FERC approved a request by the NWCPUD exempting it from Filing a Form No. 80 since “there is no existing or potential recreation within the current project boundary.” See letter is attached in Appendix A.5.</p> |

3.0 Sworn Statement and Waiver Form

All applications for LIHI Certification must include the following sworn statement before they can be reviewed by LIHI:

SWORN STATEMENT

As an Authorized Representative of Northern Wasco County People's Utility District, the Undersigned attests that the material presented in the application is true and complete.

The Undersigned acknowledges that the primary goal of the Low Impact Hydropower Institute's certification program is public benefit, and that the LIHI Governing Board and its agents are not responsible for financial or other private consequences of its certification decisions.

The Undersigned further acknowledges that if LIHI Certification of the applying facility is granted, the LIHI Certification Mark License Agreement must be executed prior to marketing the electricity product as LIHI Certified®.

The Undersigned further agrees to hold the Low Impact Hydropower Institute, the Governing Board and its agents harmless for any decision rendered on this or other applications, from any consequences of disclosing or publishing any submitted certification application materials to the public, or on any other action pursuant to the Low Impact Hydropower Institute's certification program.

FOR PRE-OPERATIONAL CERTIFICATIONS:

The Undersigned acknowledges that LIHI may suspend or revoke the LIHI Certification should the impacts of the facility, once operational, fail to comply with the LIHI program requirements.

Company Name: Northern Wasco County People's Utility District

Authorized Representative: Kurt Conger

Name: Kurt Conger

Title: Assistant General Manager

Authorized Signature: _____



Date: October 23, 2020

4.0 Contacts

A. Applicant-related contacts

| | |
|--|--|
| Facility Owner: Northern Wasco County PUD | |
| Name and Title | Power Resources Division |
| Company | Northern Wasco County PUD |
| Phone | 541-296-2226 |
| Email Address | PRD@nwascopud.org |
| Mailing Address | 2345 River Road, The Dalles Oregon 97058 |
| Facility Operator (if different from Owner): | |
| Name and Title | |
| Company | |
| Phone | |
| Email Address | |
| Mailing Address | |
| Consulting Firm / Agent for LIHI Program (if different from above): | |
| Name and Title | |
| Company | |
| Phone | |
| Email Address | |
| Mailing Address | |
| Compliance Contact (responsible for LIHI Program requirements): Kurt Conger | |
| Name and Title | Kurt Conger, Assistant General Manager |
| Company | Northern Wasco County PUD |
| Phone | 541-296-2226 |
| Email Address | Kurt-conger@nwascopud.org |
| Mailing Address | 2345 River Road The Dalles Oregon 97058 |
| Party responsible for accounts payable: Northern Wasco County PUD | |
| Name and Title | Accounts Payable |
| Company | Northern Wasco County PUD |
| Phone | 541-296-2226 |
| Email Address | accounting@nwascopud.org |
| Mailing Address | 2345 River Road The Dalles Oregon 97058 |

B. Current and relevant state, federal, and tribal resource agency contacts with knowledge of the facility (copy and repeat the following table as needed).

| | |
|--|--|
| Agency Contact (Check areas of responsibility: Flows __, Water Quality _x_, Fish/Wildlife Resources __, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation __): | |
| Agency Name | National Marine Fisheries Service |
| Name and Title | Blane Bellerud, Biologist |
| Phone | 503-231-2238 |
| Email address | Blane.Bellerud@noaa.gov |
| Mailing Address | 1201 NE Lloyd Blvd #1100 Portland, OR 97232 |
| Agency Contact (Check areas of responsibility: Flows __, Water Quality _x_, Fish/Wildlife Resources __, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation __): | |
| Agency Name | Columbia River Intertribal Fish Commission |
| Name and Title | Tom Lorz, Biologist |
| Phone | 503-238-0667 |
| Email address | lorz@critfc.org |
| Mailing Address | 700 NE Multnomah St. Portland, OR 97232 |
| Agency Contact (Check areas of responsibility: Flows __, Water Quality __, Fish/Wildlife Resources __, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation __): | |
| Agency Name | Washington Department of Fish and Wildlife |
| Name and Title | Charles Morrill, Biologist |
| Phone | 360-902-2200 |
| Email address | charles.morrill@dfw.wa.gov |
| Mailing Address | 1111 Washington St. SE Olympia, WA 98501 |
| Agency Contact (Check areas of responsibility: Flows __, Water Quality _x_, Fish/Wildlife Resources __, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation __): | |
| Agency Name | Oregon Department of Fish and Wildlife |
| Name and Title | Erick VanDyke, Biologist |
| Phone | 971-673-6068 |
| Email address | erick.s.vandyke@state.or.us |
| Mailing Address | 17330 SE Evelyn St., Clackamas, OR 97015 |
| Agency Contact (Check areas of responsibility: Flows __, Water Quality _x_, Fish/Wildlife Resources __, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation __): | |
| Agency Name | Bonneville Power Administration |
| Name and Title | Scott Bettin |
| Phone | 503-230-3000 |
| Email address | swbettin@bpa.gov |
| Mailing Address | 905 NE 11 th Ave, Portland, OR 97232 |

C. Current stakeholder contacts that are actively engaged with the facility (copy and repeat the following table as needed).

| | |
|---|--|
| Stakeholder Contact (Check areas of interest: Flows __, Water Quality _x_, Fish/Wildlife Resources __, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation __): | |
| Stakeholder Organization | US Army Corps of Engineers |
| Name and Title | Bob Cordie, Fish Biologist |
| Phone | 541-506-8275 |
| Email address | Robert.P.Cordie@usace.army.mil |
| Mailing Address | The Dalles Dam, The Dalles, OR 97058 |
| Stakeholder Contact (Check areas of interest: Flows x, Water Quality _x_, Fish/Wildlife Resources x, Watersheds x, T/E Spp. x, Cultural/Historic Resources __, Recreation __): | |
| Stakeholder Organization | Pacific States Marine Fisheries Commission |
| Name and Title | Rick Martinson, Biologist |
| Phone | 541-980-7727 |
| Email address | rickdm@gorge.net |
| Mailing Address | 2325 River Road #4, The Dalles, OR, 97058 |
| Stakeholder Contact (Check areas of interest: Flows __, Water Quality __, Fish/Wildlife Resources __, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation __): | |
| Stakeholder Organization | |
| Name and Title | |
| Phone | |
| Email address | |
| Mailing Address | |
| Stakeholder Contact (Check areas of interest: Flows __, Water Quality __, Fish/Wildlife Resources __, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation __): | |
| Stakeholder Organization | |
| Name and Title | |
| Phone | |
| Email address | |
| Mailing Address | |

Appendix A – Supporting Documentation

A.1 FERC License

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Northern Wasco County People's
Utility District

Project No. 7076-002

ORDER ISSUING LICENSE

(Major Project - 5MW or Less)
(December 31, 1987)

Northern Wasco County People's Utility District has filed a license application under Part I of the Federal Power Act (Act) to construct, operate, and maintain the Dalles Dam North Fishway Project, located in Klickitat County, Washington. The project would occupy lands of the United States administered by the Corps of Engineers and would be located at the north end of the Corps' Dalles Dam on the auxiliary water supply system to the North Fishway fish ladder.

Notice of the application has been published and comments have been received from interested federal, state, and local agencies. The Washington Departments of Game and Fisheries, the National Marine Fisheries Service (NMFS), the Confederated Tribes of the Warm Springs Reservation of Oregon and Columbia River Inter-Tribal Fish Commission, and the Confederated Tribes and Bands of the Yakima Indian Nation have been granted intervention. The NMFS petitioned, in their Motion to Intervene, for a stay of the licensing proceedings until the applicant completed the additional fishery studies requested by the Commission. The significant concerns of the intervenors are fishery resources and the cumulative effect on these resources, wildlife resources, and minimum flows. These concerns, along with those of the commenting agencies, are discussed in the Environmental Assessment.

Recommendations of Federal and State Fish and Wildlife Agencies

Section 10(j) of the Act, as amended by the ECPA, Public Law No. 99-495, requires the Commission to include license conditions, based on the recommendations of federal and state fish and wildlife agencies, for the protection, mitigation, and enhancement of fish and wildlife. The environmental assessment for the Dalles Dam North Fishway Hydroelectric Project addresses the concerns of the federal and state fish and wildlife agencies, and provides recommendations consistent with those of the agencies.

Comprehensive Plans

Section 10(a)(2) of the Act, as amended by ECPA, requires the Commission to consider the extent to which a project is consistent with comprehensive plans (where they exist) for improving, developing, or conserving a waterway or waterways affected by the project. The plans must be prepared by an agency established pursuant to federal law that has the authority to prepare such a plan or by the state in which the facility is or will be located. The Commission considers plans to be within the scope of section 10(a)(2), only if such plans reflect the preparer's own balancing of the competing uses of a waterway, based on their data and on applicable policy considerations (i.e., if the preparers consider and balance all relevant public use considerations). With regard to plans prepared at the state level, such plans are within the scope of section 10(a)(2), only if they are prepared and adopted pursuant to a specific act of the state legislature and developed, implemented, and managed by an appropriate state agency. 1/

The Commission has concluded that comprehensive planning under section 10(a)(2)(A), like comprehensive planning under section 10(a)(1), should take into account all existing and potential uses of a waterway relevant to the public interest, including navigation, power development, energy conservation, fish and wildlife protection and enhancement, recreational opportunities, irrigation, flood control, water supply, and other aspects of environmental quality. In order that the Commission may fully understand or independently confirm the content and conclusions of a comprehensive plan, the Commission provided general guidelines for developing such plans, which should contain the following: (1) a description of the waterways that are subject of the plan, including pertinent maps; (2) a description of the significant resources of the waterways; (3) a description of the various existing and planned uses for these resources; and (4) a discussion of goals, objectives, and recommendations for improving, developing, or conserving the waterways in relation to these resources. The more closely a plan conforms to these guidelines, the more weight it will have on the Commission's decisions. The Commission, however, will consider plans that do not meet the criteria for comprehensive plans, as it

1/ See Fieldcrest Mills, Inc., 37 FERC ¶61,264 (1986).

considers all relevant studies and recommendations in its public interest analysis pursuant to section 10(a)(1), to the extent that the documentation supports the plan. 2/

The staff has identified the Northwest Power Planning Council's Northwest Conservation and Electric Power Plan (Plan) and the Northwest Power Planning Council's Columbia River Basin Fish and Wildlife Program (Program) as falling within the scope of section 10(a)(2). The proposed project is consistent with the goals and policies of the Plan and the Program, since as required therein, fish and wildlife agencies, Indian tribes, and the Council have been consulted with regard to the project, and since the license is being conditioned to mitigate fish and wildlife impacts. The staff reviewed two resource plans 3/ that address various aspects of waterway management in relation to the proposed project, as part of a broad public interest examination under section 10(a)(1) of the Act. No conflicts were found.

Based on a review of agency and public comments filed in this proceeding, and on the staff's independent analysis, herein, the Dalles Dam North Fishway Project is best adapted to a comprehensive plan for the Columbia River, taking into consideration the beneficial public uses described in section 10(a)(1) of the Act.

Summary of Findings

An EA was issued for this project. Background information, analysis of impacts, support for related license articles, and the basis for a finding of no significant impact on the environment are contained in the EA attached to this order. Issuance of this license is not a major federal action significantly affecting the quality of the human environment.

The design of this project is consistent with the engineering standards governing dam safety. The project will be safe if constructed, operated, and maintained in accordance with the requirements of this license. Analysis of related issues is provided in the Safety and Design Assessment attached to this order.

2/ See Commission Order No. 481, issued October 20, 1987.

3/ Washington Statewide Comprehensive Outdoor Recreation Plan, 1985, Interagency Committee for Outdoor Recreation; Washington State Coastal Zone Management Program, 1976, Washington Department of Ecology.

The Director, Office of Hydropower Licensing, concludes that the project would not conflict with any planned or authorized development, and would be best adapted to comprehensive development of the waterway for beneficial public uses.

The Director orders:

(A) This license is issued to Northern Wasco County People's Utility District (licensee), for a period of 50 years, effective the first day of the month in which this order is issued, to construct, operate, and maintain the Dalles Dam North Fishway Project. This license is subject to the terms and conditions of the Act, which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provision of the Act.

(B) The project consists of:

(1) All lands, to the extent of the licensee's interests in those lands, enclosed by the project boundary shown by Exhibit G:

| <u>Exhibit G-</u> | <u>FERC No. 7076-</u> | <u>Showing</u> |
|-------------------|-----------------------|----------------------|
| 1 | 1 | Location Map |
| 2 | 2 | Project Boundary Map |

(2) Project works consisting of: (a) a 210-foot-long, 20-foot-wide rectangular concrete intake channel connected to the auxiliary water supply system to the North Fishway fish ladder of the Corps' Dalles Dam; (b) a 10-foot-diameter, 85-foot-long steel penstock; (c) a 35-foot by 64-foot powerhouse containing one generating unit with an installed capacity of 4200 kW at a design head of 80 feet; (d) a 3-mile-long, 12.5-kV transmission line connecting to the applicant's existing Lambert Substation; and (e) appurtenant facilities.

The project works generally described above are more specifically shown and described by those portions of Exhibits A and F recommended for approval in the attached Safety and Design Assessment.

(3) All of the structures, fixtures, equipment or facilities used to operate or maintain the project and located within the project boundary, all portable property that may be employed in connection with the project and located within or

outside the project boundary, and all riparian or other rights that are necessary or appropriate in the operation or maintenance of the project.

(C) The Exhibit G described above and those sections of Exhibits A and F recommended for approval in the attached Safety and Design Assessment are approved and made part of the license.

(D) This license is subject to the articles set forth in Form L-2, (October 1975), entitled "Terms and Conditions of License for Unconstructed Major Project Affecting Lands of the United States", except article 20. The license is also subject to the following additional articles:

Article 201. The licensee shall pay the United States the following annual charge, effective the first day of the month in which this license is issued.

- a. For the purpose of reimbursing the United States for the cost of administration of Part I of the Act, a reasonable amount as determined in accordance with the provisions of the Commission's regulations in effect from time to time. The authorized installed capacity for that purpose is 5,600 horsepower.
- b. For the purpose of recompensing the United States for utilization of surplus water or water power from a government dam a reasonable amount as determined in accordance with the provisions of the Commission's regulations in effect from time to time.

Article 202. The licensee shall clear and keep clear to an adequate width all lands along open conduits and shall dispose of all temporary structures, unused timber, brush, refuse, or other material unnecessary for the purposes of the project which result from maintenance, operation, or alteration of the project works. All clearing of lands and disposal of unnecessary material shall be done with due diligence to the satisfaction of the authorized representative of the Commission and in accordance with appropriate federal, state, and local statutes and regulations.

Article 301. The licensee shall commence construction of project works within two years from the issuance date of the license and shall complete construction of the project within four years from the issuance date of the license.

Article 302. The licensee shall at least 60 days prior to start of construction, submit one copy to the Commission's Regional Director and two copies to the Director, Division of Inspections of the final contract drawings and specifications for pertinent features of the project, such as water retention structures, powerhouse, and water conveyance structures. The Director, Division of Inspections may require changes in the plans and specifications to assure a safe and adequate project.

Article 303. The licensee shall within 90 days of completion of construction file with the Commission revised Exhibits A, F and G to describe and show the project as built.

Article 304. The design and construction of those permanent and temporary facilities, including reservoir impounding cofferdams and deep excavations, that would be an integral part of, or that could affect the structural integrity or operation of the Government project shall be done in consultation with and subject to the review and approval of the Corps' District Office. Within 90 days from the issuance date of the license, the licensee shall furnish the Corps and the Commission's Regional Director for their information, a schedule for submission of design documents and the plans and specifications for the project. If the schedule does not afford sufficient review and approval time, the licensee, upon request of the Corps, shall meet with the Corps and the Commission's staff to revise the schedule accordingly.

Article 305. The licensee shall review and approve the design of contractor designed cofferdams and deep excavations other than those approved according to Article 304 prior to the start of construction and shall ensure that construction of cofferdams and deep excavations are consistent with the approved design. At least 30 days prior to start of construction of the Cofferdam, the licensee shall file 2 copies with the Commission, and submit 1 copy each to the Commission's Regional Director, and the Corps of Engineers, of the approved cofferdam construction drawings and specifications and the letter(s) of approval.

Article 306. Within 90 days from the issuance date of the license, the licensee shall enter into an agreement with the Corps of Engineers to coordinate plans for access to and site activities on lands and property administered by the Corps so that the authorized purposes, including operation of the federal facilities, are protected. In general, the agreement shall not be redundant with the Commission's requirements contained in this license, shall identify the facility, and the study and construction activities, as applicable, and terms and conditions under which studies and construction will be conducted. The agreement shall set forth reasonable arrangements for access to the Corps site to conduct studies and construction activities, such access rights to be conditioned by the Corps as may be necessary to protect the federally authorized project purposes and operations. Should the licensee and the Corps fail to reach an access agreement, the licensee shall refer the matter to the Commission for resolution.

Article 307. The construction, operation and maintenance of the project works that, in the judgment of the Corps of Engineers, may affect the structural integrity or operation of the Corps project shall be subject to periodic or continuous inspections by the Corps. Any construction, operation and maintenance deficiencies or difficulties detected by the Corps inspection shall be immediately reported to the Commission's Regional Director. Upon review, the Regional Director shall refer the matter to the licensee for appropriate action. In cases when construction, operation or maintenance practices or deficiencies may create a situation posing imminent danger to the structural integrity and safety of the Corps project, the Corps inspector has the authority to stop construction, operation, or maintenance while awaiting the resolution of the problem.

Article 308. At least 60 days prior to start of construction, the licensee shall submit for approval a regulating plan to the Corps of Engineers, describing (a) the designed mode of hydropower operation, and (b) reservoir flow diversion and regulation requirements as established by the Corps for operation of the Corps project during construction. In addition, the licensee, prior to start of power plant operation, shall enter into an operating Memorandum of Agreement (MOA) with the Corps describing the detailed operation of the powerhouse acceptable to the Corps. The MOA shall specify any restrictions needed to protect the primary purposes of the Corps project for navigation, recreation, water

quality, and flood control. The Regional Director shall be invited to attend meetings regarding the agreement. The MOA shall be subject to revision by mutual consent of the Corps and licensee as experience is gained by actual project operation. Should the licensee and the Corps fail to reach agreement, the matter will be referred to the Commission for resolution. Three copies of the regulating plan and signed MOA between the Corps and the licensee and any revision thereof shall be filed with the Commission and one copy submitted to the Regional Director.

Article 309. The licensee shall have no claim under this license against the United States arising from the effect of any changes made in the operation or reservoir level of the Corps of Engineers' project.

Article 310. The licensee shall provide the Regional Director two copies of all correspondence between the licensee and the Corps of Engineers. The Regional Director shall not authorize construction of any project work until the Corps of Engineers' written approval of construction plans and specifications has been received.

Article 311. The licensee shall enter into a firm agreement with the Corps of Engineers, if the licensee intends to have the Corps operate and maintain the project, to reimburse the Corps for all expenses incurred in the operation and maintenance of the project. The licensee may assume the responsibility for the operation and maintenance of the project if so desired.

Article 312. The licensee shall study the feasibility of the installation of additional capacity based on the current operational criteria of the Corps for the Auxiliary Water Supply System. If the study shows that the installation of additional capacity is feasible, an amendment of license shall be filed, for approval, with the Commission prior to the start of construction.

Article 401. The licensee, after consultation with the Washington Department of Ecology, the Washington Department of Wildlife, the Washington Department of Fisheries, the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service, and before commencing any project-related land-clearing, land-disturbing, or spoil-producing activities, shall prepare and shall file for Commission approval a comprehensive plan to control erosion, dust, and slope stability, and to

minimize the quantity of sediment and other potential water pollutants resulting from project construction, spoil-disposal, and project operation and maintenance. The Commission reserves the authority to require changes to the plan. No project-related land-clearing, land-disturbing, or spoil-producing activities shall begin until the licensee is notified that the plan complies with the requirements of this article. The plan shall be based on actual-site geological, soil, slope, and groundwater conditions and on the final project design, and shall include detailed descriptions of the actual-site conditions, detailed descriptions and functional design drawings of control measures, topographic map locations of all control measures, a specific implementation schedule, specific details of monitoring and maintenance programs for the project construction period and for project operation, and a schedule for periodic review of the plan and for making any necessary revisions to the plan. The licensee shall include in the filing documentation of consultation with the agencies before preparing the plan, copies of agency comments or recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how all of the agency comments and recommendations are accommodated by the plan. Before filing the plan, the licensee shall allow a reasonable time frame, in no case less than 30 days, for agencies to comment and to make recommendations. If the licensee disagrees with any agency recommendations, the licensee shall provide a discussion of the reasons for disagreeing, based on actual-site geological, soil, and groundwater conditions, and shall provide written responses from the agencies on the licensee's reasons for disagreement.

Article 402. The licensee, after consultation with the Department of the Army, Portland District Corps of Engineers, the Northwest Power Planning Council, the Washington Department of Wildlife, the Washington Department of Fisheries, the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, the Confederated Tribes of the Warm Springs Reservation of Oregon, the Columbia River Inter-Tribal Fish Commission, and the Confederated Tribes and Bands of the Yakima Indian Nation, shall file for Commission approval, for the Dalles Dam North Fishway Hydroelectric Project, functional design drawings of the fish screen, with a design approach velocity of 0.5 foot per second, and functional design drawings of the downstream fish bypass facility for the diversion intake, including an operating and maintenance plan for these facilities, within 1 year after the date of issuance of the license. The licensee shall include documentation of

consultation and comments from the consulted entities on the functional design drawings and on the operating and maintenance plan. The Commission reserves the authority to require changes in the functional design drawings and in the operating and maintenance plan. The licensee shall file as-built drawings of the fish screens and of the downstream fish bypass facility within 6 months after completion of construction.

Article 403. The licensee, after consultation with the Department of the Army, Portland District Corps of Engineers, the Northwest Power Planning Council, the Washington Department of Wildlife, the Washington Department of Fisheries, the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, the Confederated Tribes of the Warm Springs Reservation of Oregon, the Columbia River Inter-Tribal Fish Commission, and the Confederated Tribes and Bands of the Yakima Indian Nation, shall file for Commission approval a plan to monitor the effectiveness of the fish screens and of the downstream fish bypass facility, required by article 402, under the full range of flow conditions under which the project would operate, in protecting downstream migrant fishes and in facilitating downstream fish passage. The plan shall include a proposal whereby project operation could be rapidly altered to protect downstream migrants from project-induced injury, mortality, or migration delays, and a schedule for implementing the monitoring plan and for filing the results of the monitoring program with the consulted entities and with the Commission. The licensee shall file the plan within 1 year after the date of issuance of this license, and shall include documentation of consultation and comments from the consulted entities on the plan and schedule. The Commission reserves the authority to require changes in the monitoring plan and in the schedule.

The licensee shall file with the consulted entities and with the Commission a report on the results of the monitoring study, according to the approved schedule, and shall file for Commission approval any recommendations for changes in project facilities or project operation to facilitate downstream fish passage. The filing shall include comments from the consulted entities on the monitoring results and any recommendations. The Commission reserves the authority to require changes in project facilities or project operation to ensure the protection of the fishery resources.

Article 404. The licensee, after consultation with the U.S. Fish and Wildlife Service and the Washington Department of Wildlife, and within 1 year from the date of issuance of the license and if the final project design includes the provision of above-ground transmission line, shall file for Commission approval a transmission line design plan, prepared in accordance with guidelines set forth in the publication, "Suggested Practices for Raptor Protection on Power Lines," Raptor Research Report No. 4, published by the Raptor Research Foundation, Inc., 1981. The plan shall include detailed design drawings of the transmission line, clearly showing phase spacing, configuration and grounding practices, a construction schedule, and agency comments on the adequacy of the design plan. The licensee must not conduct any transmission line construction until the plan is approved by the Commission.

Article 405. The licensee, before starting any land-clearing or land-disturbing activities within the project boundaries, other than those specifically authorized in this license, shall consult with the State Historic Preservation Officer (SHPO). If the licensee discovers previously unidentified archeological or historic properties during the course of constructing or developing project works or other facilities at the project, the licensee shall stop all land-clearing and land-disturbing activities in the vicinity of the properties and consult with the SHPO. In either instance, the licensee shall file with the Commission a cultural resource management plan prepared by a qualified cultural resource specialist.

The cultural resource management plan shall include the following: (1) a description of each discovered property indicating whether it is listed on or eligible to be listed on the National Register of Historic Places; (2) a description of the potential effect on each discovered property; (3) proposed measures for avoiding or mitigating effects; (4) documentation of the nature and extent of consultation; and (5) a schedule for mitigating effects and conducting additional studies. The Commission may require changes to the plan.

The licensee shall not begin land-clearing or land-disturbing activities, other than those specifically authorized in this license, or resume such activities in the vicinity of a property discovered during construction, until informed that the requirements of this article have been fulfilled.

Article 406. The licensee shall permit representatives from the Department of the Army, Portland District Corps of Engineers, the Northwest Power Planning Council, the Washington Department of Wildlife, the Washington Department of Fisheries, the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, the Confederated Tribes of the Warm Springs Reservation of Oregon, the Columbia River Inter-Tribal Fish Commission, and the Confederated Tribes and Bands of the Yakima Indian Nation, upon showing proper credentials, access to the Dalles Dam North Fishway Hydroelectric Project and to project records related to fish and wildlife mitigative measures.

Article 407. The Commission reserves the authority to order, upon its own motion or upon the recommendation of federal or state fish and wildlife agencies or affected Indian Tribes, alterations of project structures and operations to take into account to the fullest extent practicable at each relevant stage of the decision-making process the regional fish and wildlife program developed and amended pursuant to the Pacific Northwest Electric Power Planning and Conservation Act.

(E) The licensee shall serve copies of any Commission filing required by this order on any entity specified in this order to be consulted on matters related to that filing. Proof of service on these entities must accompany the filing with the Commission.

(F) This order is issued under authority delegated to the Director and is final unless appealed under Rule 1902 to the Commission by any party within 30 days from the issuance date of this order. Filing an appeal does not stay the effective date of this order or any date specified in this order. The licensee's failure to appeal this order shall constitute acceptance of the license.

Fred E. Springer
Acting Director, Office
of Hydropower Licensing

DIVISION OF ENVIRONMENTAL ANALYSIS, OFFICE OF HYDROPOWER LICENSING
FEDERAL ENERGY REGULATORY COMMISSION

Dalles Dam North Fishway Hydroelectric Project
FERC No. 7076-002--Washington

November 16, 1987

I. APPLICATION

On April 26, 1985, the Northern Wasco County People's Utility District (applicant) filed an application for major license, less than 5 megawatts (MW), for the Dalles Dam North Fishway Hydroelectric Project. The application was supplemented on November 12, 1985, March 19, 1986, and April 16, 1987.

The proposed project would be built at the north end of the existing Dalles dam, operated by the Department of the Army, Portland District Corps of Engineers (Corps). The dam is located on the Columbia river, near the town of the Dalles, Oregon (figure 1). The proposed project would be located on the auxiliary water supply system (AWSS) for the north fishway at the dam. The Dalles dam, an 8,700-foot-long structure, was completed in 1960 and impounds Lake Celilo, which has a surface area of 9,400 acres. The Corps operates the dam for flood control, navigation, power production, and fish passage. The proposed project would affect federal property administered by the Corps.

II. RESOURCE DEVELOPMENT

A. Purpose

The project would provide an estimated average of 25,250,000 kilowatthours (kWh) of electrical energy per year to the applicant.

B. Need for Power

According to the 1986-1987 Edition of the Electrical World Directory of Electric Utilities, the applicant's distribution system currently serves approximately 8,500 metered customers. At present, the applicant owns no generating capacity, and purchases power requirements from the Bonneville Power Administration (BPA) under a 10-year Requirements Customer Contract. In 1985, the

applicant purchased 204,005,568 kWh of electric energy from BPA. Ninety-six percent of this energy was resold to the applicant's metered customers. The applicant's summer peak demand in 1985 was 44.2 MW and the winter peak demand, for the same year, was 55.2 MW.

Under the Pacific Northwest Electric Power Planning and Conservation Act (PNEPPCA), BPA is required to meet the net firm power requirements of each requesting Pacific Northwest utility. Under the PNEPPCA, BPA is constrained from owning or constructing generating resources, but is required to purchase, on a long-term basis, the power-producing capabilities of resources sponsored by other entities, to the extent that such resources are required for BPA to meet its responsibilities. The PNEPPCA provides authority for BPA to restrict its power sales obligations, if it is unable to acquire sufficient resources to meet its responsibility. The BPA, aware of this escape provision in the PNEPPCA and aware of the unavoidable uncertainties in load forecasting as well as uncertainties in its ability to contract additional resources, has forewarned customers that, if available resources are not sufficient to meet contract obligations, BPA will implement contract curtailments, unless Requirements Customers are able to provide sufficient generating resources to cover the customers' load growth.

The number and complexity of events that affect the energy requirements of a specific geographic region over a 10 or 20-year period can produce serious errors in forecasting future requirements. As a result, the BPA, in the 1987 Resource Strategy report, gives the results of studies of several load-growth paths. If load-growth should follow the low-growth path, BPA predicts that neither the region nor BPA will need additional resources during the next 20 years. If regional loads grow at the high forecasted rate studied in the report, however, BPA will need additional resources in 1991, and the region will need additional resources in 1989. History has demonstrated that either of these extremes can become a reality.

Since the proposed project, if licensed, is expected to go on-line (into commercial operation) in the early 1990's, it is likely that the applicant may need the output of the proposed project to avoid the curtailment of its BPA contract.

Although project power is currently not needed to meet a resource deficit in the region or to meet BPA load responsibilities, the output would be useful in off-loading fossil-fueled units, thereby conserving nonrenewable primary energy resources and reducing atmospheric pollution.

The applicant states that it plans to continue the purchase of its total requirements from BPA and to sell the total output of the proposed project as long as BPA power is available, or until parallel buying and selling is not financially advantageous. At such a time as the project power is used to supply the applicant's customers, in-system dispatch ability would be advantageous to the applicant. The project power would also reduce the applicant's dependence on outside purchases, and would reduce concerns about future purchase prices and future availability.

C. Conservation and Load Management

Because the applicant is a municipal utility, section 10(a)(2)(c) of the Federal Power Act (Act), as amended by the Electric Consumers Protection Act of 1986 (ECPA), requires the Commission to address in writing the applicant's present and planned electricity consumption efficiency improvement programs, including its plans, performance, and capabilities for encouraging or assisting its customers to conserve electricity cost effectively, taking into account published policies restrictions and the requirements of relevant state regulatory authorities.

In response to the staff's request for information under section 10(a)(2)(c), the applicant submitted a report entitled, "Conservation and energy efficiency programs, as of December 31, 1986."

The present contract with BPA requires the applicant to comply with the BPA Residential Weatherization Program and to encourage the builders of new homes to follow construction practices that will qualify for certification as a "Super Good Cents Home," according to BPA standards and specifications. Under the residential weatherization program, as of December 31, 1986, the applicant has performed 2,146 residential energy audits and weatherized 1,081 homes. Under the Commercial and Residential Water Heater Wrap Program, the applicant, through counselling and public information programs, has persuaded a substantial fraction of its customers to wrap hot water tanks with thermal insulating material or wraps. The applicant has also been successful in promoting the conversion of street and area lighting to much more efficient, high-pressure sodium lights.

The staff believes that the applicant has made a good-faith effort to conserve electric energy and to comply with the objectives of section 10(a)(2)(c) of the Act.

III. PROPOSED PROJECT AND ALTERNATIVES

A. Proposed Project

1. Project Description

The proposed project would consist of the following: (1) a 210-foot-long, 20-foot-wide, rectangular concrete intake channel; (2) a 10-foot-diameter, 85-foot-long steel penstock; (3) a 64-foot-long by 35-foot-wide powerhouse, containing one generating unit with an installed capacity of 4,200 kW at a design head of 80 feet; and (4) a 3-mile-long, 12.5 kilovolt (kV) transmission line, connected to the applicant's existing Lambert substation.

The applicant would operate the proposed project using releases to the AWSS supplied to the north fish ladder by the Corps.

2. Applicant's Proposed Mitigative Measures

To protect water quality and to prevent adverse effects on the Corps' operation of the north fish ladder and of the associated AWSS, the applicant would confine construction activities affecting the AWSS to the normal scheduled shutdown period of the ladder and the AWSS, from December 1 through February 28. The applicant would replant vegetation disrupted by construction activity.

To protect downstream migrant anadromous salmonids and to avoid affecting the operation of the AWSS in the event of an emergency shut-down of the proposed project, the applicant would provide fish screens and a downstream fish bypass system at the penstock intake. The fish screens would be designed for an approach velocity of 1.0 foot per second (fps). The applicant proposes to use an open-baffled flume fish bypass system if there is an agency-accepted design developed by the time of final project design. To prevent accumulation of debris on the fish screens, the applicant would install the screens at a shallow angle to the flow, and would hydraulically flush debris with high pressure hoses, actuated by predetermined head differentials. Temporary back-up screens would be provided to allow removal and cleaning of the main screen panels.

B. Alternatives to the Proposed Project

The alternative to the proposed action is denial of license. If the license is denied, the applicant would continue to purchase capacity and energy from BPA, as long as available.

No action would prohibit the applicant from constructing the proposed project. No action would involve no alterations to the existing environment and would preclude the applicant from producing electrical power at the site.

IV. CONSULTATION AND COMPLIANCE

A. Agency Consultation

Commission regulations require prospective applicants to consult with the appropriate resource agencies before filing an application for license. This consultation constitutes an initial step in compliance with the Fish and Wildlife Coordination Act, the Endangered Species Act, the National Historic Preservation Act, and other federal statutes. Prefiling consultation must be complete and must be documented in accordance with the Commission's regulations.

After the Commission accepts the application, concerned entities may submit formal comments during a public-notice period. In addition, organizations and individuals may petition to intervene and become a party to any subsequent proceedings. The Commission makes the comments provided by concerned entities part of the record, and the staff considers the comments during the review of the proposed project.

After the Commission issued a public notice of the proposed project on March 17, 1986, the following entities commented on the application.

| <u>Commenting entity</u> | <u>Date of letter</u> |
|---|--|
| Department of the Army, Portland District Corps of Engineers Washington Department of Fisheries | February 14, 1986 May 15, 1986 |
| <u>Intervenors</u> | <u>Date of petition</u> |
| Washington Departments of Game and Fisheries National Marine Fisheries Service Confederated Tribes of the Warm Springs Reservation of Oregon and Columbia River Inter-Tribal Fish Commission Confederated Tribes and Bands of the Yakima Indian Nation | May 14, 1986 May 16, 1986 May 16, 1986 May 16, 1986 |

B. Water Quality Certification

As required by Commission Order No. 464, the staff notified the Washington Department of Ecology (WDE) that for the proposed project, the certification requirements of section 401(a)(1) of the Clean Water Act (33 United States Code, section 1341(a)(1)(1982)) were waived. In a letter dated April 2, 1987, the WDE was given 30 days to file recommendations on water quality. Although the WDE provided recommendations in a letter dated June 2, 1987, this environmental assessment addresses these recommendations.

C. Pacific Northwest Electric Power Planning and Conservation Act

Under Section 4(h) of the PNEPPCA, the Northwest Power Planning Council (Council) developed the Columbia River Basin Fish and Wildlife Program (Program) to protect, mitigate, and enhance fish and wildlife resources associated with the development of hydroelectric projects. The Program contains a framework for assessing the impacts of new hydroelectric development on fish and wildlife resources and lists a number of general mitigative measures that should be implemented for any new development.

The program requires that fish and wildlife agencies, Indian tribes, and the Council be consulted during the study, design, construction, and operation of new hydroelectric projects. The Commission's regulations require applicants to initiate prefiling consultation with these entities and to give these entities the postfiling opportunity to review and to comment on the license application. The applicant has conducted this consultation process.

The Council states in the Program that authorization for new hydroelectric projects should include conditions of development that would mitigate the impacts of the project on fish and wildlife resources. The applicant proposes ways to mitigate adverse impacts. Moreover, where practical, the Commission has the authority to order alterations of project structures and operations, in order to take into account the Council's Program. Accordingly, the staff concludes that the proposed project does not conflict with the applicable provisions of the Council's Program.

V. ENVIRONMENTAL ANALYSIS

A. Proposed Project

The area of the proposed project is bounded on three sides by the north fish ladder and on the fourth side by the Dalles dam. The

proposed project would be built within an area previously disturbed during construction of the Dalles dam; this area consists primarily of barren rock with little vegetative cover, which the applicant would replace after construction. The area receives little use by wildlife. Although the area is fenced, the Corps provides access to the fish passage facilities for public viewing. The views in the area are dominated by the Dalles dam and associated facilities. Because of these circumstances, the staff concludes that the proposed project would not affect soils and geology, vegetation, wildlife, recreation, or socioeconomics.

1. General Description of the Locale

The Dalles dam is situated on the Columbia River at river mile 191.5. The Deschutes River is a major tributary that enters the Columbia River, 12 miles upstream from the proposed project area. The climate of the Columbia River drainage, which is located in the belt of the prevailing westerlies, is characterized by wet, relatively mild winters, and warm, dry summers.

The Dalles dam is located in Klickitat County, Washington, and in Wasco County, Oregon. The major population center in the project area is the Dalles, Oregon, with a population of approximately 8,500. Tourism is an important regional industry; recreational activities include fishing, hunting, boating, camping, skiing, and hiking.

2. Water Resources

Affected Environment: The Dalles dam is 45.4 miles upstream from Bonneville dam and 24.1 miles downstream from John Day dam. The Columbia River drains approximately 260,000 square miles of the Pacific Northwest. Drainage areas include most of Washington, Oregon, and Idaho, and portions of Montana, Wyoming, Utah, Nevada, and British Columbia, Canada (Federal Energy Regulatory Commission, 1987). Flow in the Columbia River is regulated by an extensive series of dams and reservoirs. Flows in the river are characteristically greatest from mid-April through July, with annual peak flows usually occurring in June. In 1984, the maximum average monthly flow of 343,700 cubic feet per second (cfs) occurred in June, and the minimum flow of 115,800 cfs occurred in September (Northern Wasco County People's Utility District, 1985, supplemental information).

The Dalles dam impounds Lake Celilo. Lake Celilo is 24 miles long and has a surface area of 9,400 acres. Operation of the upstream John Day dam causes daily fluctuations in the reservoir of as much as 5 feet.

The existing water quality of the Columbia River is generally good. The state of Washington classifies the water of the Columbia River at the Dalles dam as Class A, which is considered excellent (Washington Department of Ecology, 1982). The water quality of class A meets or exceeds the requirements for all, or substantially all, uses, including domestic, industrial, and agricultural water supply, salmonid migration, rearing, spawning, and harvesting, wildlife habitat, recreation, and commerce and navigation.

Dissolved oxygen (DO) concentrations are generally high, and range between 73 and 136 percent of saturation (Corps of Engineers, 1981). Water temperatures vary seasonally. At the Dalles dam in 1984, for example, water temperature was 35 degrees Fahrenheit (°F) in January; water temperature increased to 71°F in August, and decreased to 39°F in December (Corps of Engineers, 1984b). Water clarity is generally greatest during the latter half of the year, when river flows decrease (Northern Wasco County People's Utility District, 1985).

Environmental Impacts and Recommendations:

Excavation of the area for the proposed powerhouse and construction of the intake channel could increase levels of turbidity and sedimentation in the immediate project area. The introduction of oil, paint, concrete, and other toxic substances during project construction and operation could result in fish kills in downstream areas and could interfere with upstream fish passage.

The WDE states that the licensee must obtain a "Water Quality Standards Modification" before starting work in the waterway, and must submit to WDE the plan of work for the portion of the project within the waterway, a copy of the Hydraulics Project Approval, and an explanation of how the state Environmental Protection Act has been addressed. To protect the water quality, the WDE recommends that the licensee do the following: (1) prepare an "Oil spill prevention, containment, and counter-measure plan," which would include all oil-filled equipment associated with the proposed project; (2) prevent any petroleum products, paint, chemicals, or other harmful materials from entering the water; (3) dispose all construction debris on land; (4) minimize turbidity level increases resulting from work in the waterway; (5) allow for the complete drying of all lumber treated with creosote or other protective material before its use in or near the waterway; (6) cure concrete a minimum of 7 days before any contact with the water; (7) prevent the appearance of a visible petroleum product sheen associated with mobile equipment that enters the water; and (8) notify the WDE at least 5 days in advance of the start of dredging or other work in the waterway.

Construction of the proposed project could result in the degradation of water quality in the vicinity of the north fish ladder through the introduction of sediments and toxic substances. These impacts could, in turn, result in fish kills and could interfere with fish passage through the Dalles dam area. The applicant, however, has not yet developed a comprehensive plan to protect water quality during project construction and operation. Therefore, the licensee, after consultation with the appropriate state and federal agencies, should develop a comprehensive plan to control erosion and to minimize the quantity of sediment and other potential water pollutants resulting from project construction, spoil disposal activities, project operation, and maintenance. The plan should be filed for Commission approval before project construction begins.

Unavoidable Adverse Impacts: Construction-related activities would cause minor, short-term increases in turbidity in areas downstream from the proposed project.

3. Fishery Resources

Affected Environment: The fish community of the Columbia River in the vicinity of the Dalles dam is diverse and is composed of anadromous and resident species. Resident game fish include bluegill (Lepomis macrochirus), smallmouth bass (Micropterus dolomieu), largemouth bass (M. salmoides), yellow perch (Perca flavescens), and walleye (Stizostedion vitreum). Other resident species in the area are white sturgeon (Acipenser transmontanus), mountain whitefish (Prosopium williamsoni), northern squawfish (Ptychocheilus oregonensis), and prickly sculpin (Cottus asper).

The most valuable fish species that pass through the area are the endemic anadromous salmonids. These species include chinook salmon (Oncorhynchus tshawytscha), coho salmon (O. kisutch), sockeye salmon (O. nerka), and steelhead trout (Salmo gairdneri). Historically, the Columbia River supported significant runs of these species before the mid-19th century. It has been estimated that between 7.5 and 8.9 million fish returned to the river each year to spawn (Pacific Northwest Utilities Conference Committee, 1987). As settlement of the area developed, however, run sizes decreased substantially because of fish harvest, habitat degradation, and the construction and operation of dams. Significant numbers of American shad (Alosa sapidissima) also occur within the Columbia River.

Counts of upstream migrant anadromous fishes at the Dalles dam have averaged 417,000 for the 28-year period from 1957 to 1984. Counts of chinook salmon, steelhead trout, sockeye salmon, and coho salmon

have averaged 220,178, 121,514, 63,267, and 13,030, respectively, during this period. In addition, 192 chum salmon (O. keta) and 63 pink salmon (O. gorbuscha) have been observed passing the Dalles dam, although few have been observed in recent years.

Chinook salmon is the most abundant species of salmon that passes through the Dalles dam area, and consists of three runs: spring (January 1 through June 3), summer (June 4 through August 3), and fall (August 4 through December 31). Periods of upstream migration for these runs occurs virtually throughout the year. The annual run sizes at the Dalles dam between 1957 and 1984 for spring, summer, and fall chinook have averaged 66,912, 48,853, and 99,307, respectively. The 10-year average counts for chinook salmon runs for the period between 1975 and 1984 were 24, 42, and 9 percent less than the 28-year average counts. Both spring and summer chinook spawn in tributaries, whereas fall chinook spawn in the Columbia River mainstem, particularly in the Hanford Reach (Bell, 1984), upstream of McNary dam (100.5 miles upstream of the Dalles dam). Natural spawning populations of fall chinook have averaged 25,600 between 1978 and 1984; this run has responded well to efforts to stabilize flows at the existing Priest Rapids Dam Project (FERC No. 2114), and to measures at lower Columbia River projects to assist downstream migration (letter from William R. Wilkerson, Director, Department of Fisheries, Olympia, Washington, October 30, 1985).

Coho salmon adults migrate through the Dalles dam area from early July through November; peak migration occurs in September (Corps of Engineers, 1984b). An annual average of 13,030 coho salmon have been counted passing through the Dalles dam area between 1957 and 1984; the 10-year average (1975 to 1984) is 9,827. Coho salmon that pass the Dalles dam area spawn in tributaries to the mid- and upper-Columbia River (Bell, 1984).

Sockeye salmon adults, comprising early and late runs, migrate through the project area between May and October, with most fish passing through in June and July (Corps of Engineers, 1984b). The 28-year average count of sockeye salmon at the Dalles dam (1957 to 1984) is 63,267; the 10-year average (1975 to 1984) is 49,828. Substantial increases in the adult run size occurred in 1983 and 1984. The Columbia River sockeye salmon run is produced entirely of wild stocks, and efforts to supplement this run by artificial means have so far been unsuccessful (letter from Tim Weaver, Attorney for the Confederated Tribes and Bands of the Yakima Indian Nation, Yakima, Washington, May 16, 1986). Sockeye salmon spawn in tributaries upstream of lakes (Bell, 1984), principally using Columbia River tributaries upstream of Priest Rapids dam (Northern Wasco County People's Utility District, 1985b).

Steelhead trout runs are comprised of three races: an "A" group (earlier summer run), a "B" group (later summer run), and a winter run. The upstream passage seasons for the "A", "B," and winter runs are June to early August, August to October, and November to mid-June, respectively (Bell, 1984). The 28-year average count of steelhead trout passing through the Dalles dam area (1957 to 1984) is 124,927, which approximates the 10-year average for the period 1975 to 1984 of 125,238 (Corps of Engineers, 1984b). Steelhead trout spawn in Columbia River and Snake River drainages (Bell, 1984; Northern Wasco County People's Utility District, 1985b.)

The downstream migration of juvenile anadromous salmonids consists primarily of subyearling (less than 1 year of age) and yearling chinook salmon, coho salmon, sockeye salmon, and steelhead trout (Northern Wasco County People's Utility District, 1985b). The Northern Wasco County People's Utility District (1985a) states that the smallest of the juvenile migrants passing through the Dalles dam area probably are subyearling chinook salmon, which could include the spring, summer, and fall races, although subyearling fall chinook salmon are anticipated to be most abundant. Bell (1984) indicates that spring and summer chinook salmon juveniles typically migrate as yearlings, whereas fall chinook migrate as subyearlings. The juvenile downstream migration season for chinook, coho, and sockeye salmon and steelhead trout generally takes place from spring through fall (Bell, 1984), with variable peak movement periods occurring within this time frame, depending on species.

The Corps has operated upstream fish passage facilities at the Dalles dam since 1957. Upstream fish passage facilities consist of two fish ladders, one on the Oregon shore (east ladder) and the other near the Washington shore (north ladder). The east ladder passes upstream migrants collected at the south end of the spillway and across the downstream face of the powerhouse; the north ladder passes fish collected at the north end of the spillway. Approximately 90 percent of upstream fish passage is through the east ladder (Northern Wasco County People's Utility District, 1985a); the east ladder is next to the powerhouse containing 22 main generating units, so fewer fish are attracted to the north ladder. The north ladder, within which the proposed project would be constructed, operates between March 1 and November 30 of each year, and is shut down from December 1 through February 28. Exceptions to the scheduled shutdown period may occur when repairs are necessary to the east ladder (Corps of Engineers, 1984b). The north ladder currently operates with a flow of 70 cfs, and the AWSS, during nonspill conditions at the dam, operates with a flow of 730 cfs; attraction water flows are increased to aid the attraction of upstream migrants during periods of spill.

Downstream fish passage facilities at the Dalles dam consist of an ice and trash sluiceway, which extends the length of the powerhouse (Northern Wasco County People's Utility District, 1985a). Downstream migrants are skimmed from the forebay and released in the tailrace, when the sluiceway gates are open.

Columbia River Basin Restoration Efforts

Various entities are making efforts to restore Columbia River anadromous fish runs. Foremost among these efforts is the Council's Program. The Program was adopted in 1982, with amendments added in 1984 and 1987. Under the 1987 Program, the Council has established an interim goal of doubling the current run size of adult fish, from approximately 2.5 million to 5 million (Northwest Power Planning Council, 1987). As part of a systemwide approach, potential fish production of each Columbia River subbasin will be evaluated to determine the relative potential contribution of each toward the interim goal. Efforts to achieve this goal will be directed to areas upstream of Bonneville dam and to the interaction of fish passage, harvest regulation, and habitat management. Numerous other programs are being implemented within the Columbia River Basin, including the Bureau of Reclamation's Yakima River Basin Enhancement Project, the Lower Snake River Compensation Plan, and the Hells Canyon Complex settlement (letters from S. Timothy Wapato, Executive Director, Columbia River Inter-Tribal Fish Commission, Portland, Oregon, May 16, 1986, and Tim Weaver, Attorney for the Confederated Tribes and Bands of the Yakima Indian Nation, Yakima, Washington, May 16, 1986).

Between August 1984 and March 1985, several state and federal fish and wildlife agencies and tribes conducted a study, entitled "Interim Categorization of Proposed Hydroelectric Projects in the Pacific Northwest Based on their Potential Impacts to Fish and Wildlife Resources." Agencies and tribes participating in the study were the Idaho Department of Fish and Game, the Montana Department of Fish, Wildlife, and Parks, the Oregon Department of Wildlife, the Washington Departments of Wildlife (WDW) and Fisheries (WDF), the U.S. Fish and Wildlife Service (FWS), the National Marine Fisheries Service (NMFS), and the Columbia River Inter-Tribal Fish Commission. In the study, the agencies place the proposed project under category II-B, a designation indicating that site-specific or cumulative impacts are not clearly determinable by the appropriate fish and wildlife agencies and tribes. The agencies and tribes would require additional information to reclassify this project into a category that would permit or preclude development. Specific information that is needed includes the adequacy of the design of the necessary

fish facilities, the effect of changes in the operating criteria of the AWSS, and the size of juvenile fish at the project area (letter from Dale R. Evans, Division Chief, National Marine Fisheries Service, Portland, Oregon, October 30, 1985).

Environmental Impacts and Recommendations:

Turbidity and sedimentation

Increased levels of turbidity and sedimentation generated during project construction, particularly during the removal of an estimated 6,000 cubic yards of material, could disrupt the upstream migration of adult anadromous fishes. Although increased turbidity likely would be rapidly diluted by Columbia River flows downstream, elevated turbidity levels in the immediate vicinity of the north ladder might interfere with upstream migrants locating the ladder entrance and might delay migration. In addition, the introduction of toxic substances during project construction could result in fish kills in the area of the fishway.

Although applicant has not developed a detailed erosion and sediment control plan for minimizing the impacts of construction on fish passage, the implementation of measures to protect water quality, addressed previously in section V.A.2., also would protect the fishery resources and would minimize impacts to upstream fish passage.

Operation of the Attraction Water Supply System and North Ladder

Depending on the construction schedule for the proposed project, construction activities could adversely affect the Corps' operation of the AWSS. Interference with the operation of the AWSS during project construction or operation would adversely affect upstream fish passage.

Several state and federal agencies and tribes have expressed concern about the proposed project's effects on the operation of the AWSS and of the north ladder. The WDW and the WDF state that construction and operation of the proposed project could affect the efficient operation of the north ladder. One of the primary concerns of the NMFS is to ensure that use of the AWSS for project generation does not impair optimum operation of the north ladder. The NMFS states that variance from criteria established by the fishery agencies and the tribes for operating the existing fishway could reduce attraction flows at the ladder entrances, thereby reducing the efficiency of adult fish passage. Specifically, the NMFS states that operation of the proposed project must be

considered secondary to the purpose of fishery resource protection at the north ladder, which includes operation of the AWSS to provide optimum adult fish passage conditions at all times; the NMFS says that the project must operate within the constraints of these purposes and must not impair or alter these purposes. In addition, the NMFS states that the proposed project must be designed, built, and operated in a manner that provides sufficient flexibility to modify operation of AWSS to improve adult fish passage conditions. The Confederated Tribes of the Warm Springs Reservation of Oregon and the Columbia River Inter-Tribal Fish Commission (Tribes) state that while the applicant has acknowledged that the provision of flows must take priority over project operation, the applicant has not developed adequate information regarding guarantees of flows to the AWSS during construction and during emergency or malfunction situations. In addition, the Tribes say that project design must include the flexibility to alter project operations when needed, to improve adult fish passage through modified operation of the AWSS.

The applicant acknowledges that the primary constraint on the proposed project is that the project must not degrade the operation of the existing north ladder and the AWSS. As to the scheduling of project construction, the applicant acknowledges that any construction work that affects fish passage must be conducted from December to February, during the maintenance shutdown period for the north fish ladder. The applicant says that preparatory work that would not affect the existing system, such as move-in, surface preparation, and excavation of the penstock passage, penstock headworks, and intake water passage, could be conducted during the operational period for the ladder. The applicant would limit preparatory efforts to work that would not affect ladder operation. With regard to project operation, the applicant states that turbine and bypass flows would be controlled to match the existing discharge characteristics of the Taintor gate, that regulates the AWSS flows; consequently, the applicant does not anticipate any discernable changes in operation of the existing AWSS. In addition, the applicant states that project design includes the flexibility to accommodate changes in AWSS operating criteria.

Continued operation of the north ladder and the AWSS, as regulated by the Corps, is essential to efficient upstream passage of adult anadromous fishes. Despite the greater number of migrants that use the east ladder (approximately 90 percent), the north ladder contributes substantially to upstream passage. Further, the north ladder becomes increasingly important when the east ladder is shut down for maintenance or repairs. Any interference with operation of the north ladder and the AWSS that would be caused by construction,

operation, or maintenance of the proposed project would pose an unacceptable risk to successful upstream fish passage. A critical consideration would be ensuring that construction activities would not preclude operation of the AWSS if maintenance or emergency shutdown of the east ladder required operation of the north ladder during the construction period. To ensure that upstream fish passage is fully protected and that the Corps' operation of the north ladder and AWSS is maintained, the licensee should coordinate construction activities and project operation with the Corps. Further, the licensee should reach an agreement with the Corps concerning operation of the proposed project, which may include future alterations of flows to the AWSS available for project operation.

Downstream Fish Passage

Downstream-migrating juvenile anadromous fishes that enter the AWSS would be subject to entrainment if fish screens are not provided at the project intake or to impingement if fish screens are not properly designed and operated. An improperly designed bypass system would subject downstream migrants to injury or to delays in downstream passage.

A major concern of the Corps, the state and federal fish and wildlife agencies, the Tribes, and the Confederated Tribes and Bands of the Yakima Indian Nation (Yakimas) is the proper design, operation, and maintenance of the intake fish screens and downstream bypass system. The Corps states that the project intake must be adequately screened to protect downstream migrants, and that all bypassed fish must be moved to a safe place in the tailrace. Specifically, the Corps states that the vertical velocity component through the fish screen should not exceed 1.0 fps. With regard to the downstream fish bypass, the Corps notes that the passage of debris through the bypass system will be hazardous to downstream migrants.

The WDW and the WDF state that the intake channel must be properly designed and screened to meet approach velocities consistent with the size of the juvenile fish present. The WDF specifically recommends that the licensee should design the intake fish screens with an approach velocity of 0.7 fps; if the licensee wishes to conduct studies to demonstrate that a greater approach velocity would protect downstream migrants, the WDF would adjust its approach velocity requirements accordingly (letter from William R. Wilkerson, Director, Washington Department of Fisheries, Olympia, Washington, April 8, 1985). The WDF also cites the need for back-up screens when fish screens are raised for cleaning. With regard to the

design of the downstream migrant bypass, both the WDW and the WDF express their preference for an open-baffled flume bypass for juveniles, as opposed to a closed system that could cause maintenance problems and fish injury or mortality (letters from Claude Stoddard, Regional Habitat Program Manager, Washington Department of Game, Vancouver, Washington, October 30, 1985, and William R. Wilkerson, Director, Washington Department of Fisheries, Olympia, Washington, December 3, 1984).

A primary concern of the NMFS is that downstream migrating juvenile fish attracted to the project intake not be injured or killed. The NMFS recommends that the intake fish screens be designed to provide an approach velocity of 1.0 fps, that a post-construction evaluation be conducted, and that project operation be modified to alleviate any significant fishery problems (letter from Dale R. Evans, Division Chief, National Marine Fisheries Service, Portland, Oregon, October 30, 1985). In addition to the need for intake fish screens, the NMFS states that an effective juvenile bypass is necessary. The NMFS currently recommends an open-baffled flume bypass system, but says that further consultation with the fishery agencies is needed before final design (letter from Dale R. Evans, Division Chief, National Marine Fisheries Service, Portland, Oregon, October 30, 1985).

The NMFS states that it reserves the right to prescribe any necessary upstream and downstream fish facilities, pursuant to section 18 of the Act, 4/ which must be designed and operated to comply with the NMFS' screening and passage criteria. These measures include, but are not limited to, the following: (1) consultation during additional preliminary engineering; (2) fishery agency and tribal approval of conceptual design prior to initiation of final design; (3) fishery agency and tribal review and approval of final design drawings at 50, 95, and 100 percent of completion; (4) fishery agency and tribal inspection during construction and at the completion of construction prior to watering up; (5) operating the fish facilities year-round, except for agency- and tribal-

4/ Section 18 of the Act provides: "The Commission shall require the construction, maintenance, and operation by a licensee at its own expense of . . . such fishways as may be prescribed by the Secretary of the Interior or the Secretary of Commerce."

approved maintenance shutdowns; (6) provisions for dewatering the entire screen for regular inspection and maintenance, including a regular inspection, repair, and maintenance schedule; (7) provisions for routine access for inspection during project operation; and (8) implementation of a postconstruction evaluation of fish protection facilities, including the implementation of any necessary modifications to project facilities or operation. The staff was informed that a fishway prescription by the NMFS would not prescribe measures beyond those already discussed during the consultation process (personal communication, Brian Brown, Fishery Biologist, Environmental and Technical Services Division, National Marine Fisheries Service, Portland, Oregon, October 20, 1987).

Although the FWS did not comment in response to the public notice for the proposed project, it did comment during the pre-application consultation period. Specifically, the FWS recommends that if data show that fish shorter than 60 mm in length are not normally present in the project area, then a 1.0 fps approach velocity would be acceptable; if, however, fish smaller than 60 mm are present in significant numbers, then the maximum approach velocity cannot exceed 0.5 fps (letter from Russel D. Peterson, Field Supervisor, U.S. Fish and Wildlife Service, Department of the Interior, Portland, Oregon, January 23, 1985). In addition, the FWS states that considering the maintenance and evaluation problems associated with a closed bypass, the initial design plans should provide for an open-flume bypass.

Both the Tribes and the Yakimas believe that the existing and potential production of the anadromous fishery resources in the Columbia River must be fully protected from adverse effects associated with the proposed project. The Yakimas state that downstream migrating juvenile fish attracted to the intake flow must not be injured or killed and that the applicant should provide plans for and should study open-flume bypass methods. The Tribes state that the applicant has estimated project-related impacts to the fishery resources, based on the numbers of juvenile migrants that have passed through the project area in recent years, but points out that current numbers are much reduced. The Tribes say that increased numbers of fall chinook subyearling migrants will be released from the Lyons Ferry hatchery complex on the Snake River, and that significant measures are being taken to build mid-Columbia River summer chinook salmon runs, some of which would be expected to be less than 60 mm in length as downstream migrants. The Tribes note that the applicant has agreed to conduct a sampling study to

determine the occurrence and number of downstream migrants using the AWSS, and state that a decision to license the proposed project should be delayed until the study is completed. In addition, the Tribes are concerned about debris accumulation, which would alter uniform flow through the fish screens.

As stated previously, the applicant proposes to install fish screens across the project intake to prevent turbine mortality of juvenile downstream migrants. The screens would be designed to maintain an approach velocity of 1.0 fps, and would include back-up screens, which would be installed when the main screens are raised for cleaning. Debris accumulation on the screens would be minimized by the shallow angle of the screen face, and the applicant would hydraulically flush debris from the screens with high pressure hoses. The applicant also proposes to install an open-baffled flume, if there is an agency-accepted design developed by the time of final project design.

The applicant believes that an approach velocity of 1.0 fps complies with the NMFS design criteria, which is intended to protect fish longer than 60 mm. In support of its belief that few fish less than 60 mm in length would occur in the project area, the applicant provides data on downstream migrants from John Day dam and from the Deschutes River. The applicant estimates that between 1980 and 1984, 135 subyearling chinook salmon less than 60 mm in length that passed John Day dam would have passed through the north ladder's AWSS. Assuming a 4-percent fish screen mortality rate and a 5-percent return rate of adults from chinook salmon less than 60 mm long, adult losses would not have exceeded one fish per year. For subyearling chinook originating from the Deschutes River, the applicant estimates equivalent returning adult losses resulting from the proposed project as two adult fish (based on 1979 data) and one fish (based on 1977 data).

At the request of the Commission, the applicant collected fish samples at the AWSS in 1986 to determine the species composition and length distribution of downstream migrants. Since the applicant collected few fish, however, the fishery agencies questioned the data's validity, saying that anticipated low-flow conditions in 1987 would likely produce similar results; as a result, the applicant conducted no further sampling. Although the 1986 data may not accurately characterize the downstream fish passage through the AWSS, 29 percent of captured fish were chinook salmon less than 60 mm long.

Based on data from the applicant, it appears that significant numbers of subyearling chinook salmon less than 60 mm long would not occur at the AWSS. Consequently, compliance with the agencies' 1.0 fps approach velocity criterion probably would protect downstream migrants that pass through the AWSS. The applicant's estimation of the number and length of fish that pass through the system is not based on comprehensive, site-specific data, however. Further, the applicant's calculations do not consider anticipated increases in anadromous fish runs resulting from various enhancement measures being undertaken throughout the Columbia River Basin. Achieving the Program's interim goal of doubling the current adult run size to 5 million fish would increase the numbers of downstream migrants that pass through the Dalles dam area.

As the majority of juvenile salmonids produced in the Columbia River Basin must pass through the Dalles dam area, the staff believes that the licensee should design intake fish screens with an approach velocity of 0.5 fps. This approach velocity would protect downstream migrants both longer and shorter than 60 mm in length. Although significant numbers of juveniles less than 60 mm long currently may not pass through the project area, enhancement efforts may increase the number of this size fish in the future. In addition, unusual, high-flow events, which may have been responsible for the relatively large proportion of juvenile fall chinook salmon less than 60 mm long recovered in the applicant's sampling in 1986 by prematurely flushing subyearling salmon from the Hanford reach (personal communication, Kevin Bauersfeld, Fish Biologist, Washington Department of Fisheries, Tumwater, Washington, October 2, 1987) may be expected in the future. Therefore, the licensee, after consultation with the Corps, the Council, the state and federal fish and wildlife agencies, the Tribes, and the Yakimas, should develop and submit for Commission approval functional design drawings of intake fish screens and a maintenance and operating plan.

In addition, the licensee, after consultation with the Corps, the Council, appropriate state and federal fish and wildlife agencies, the Tribes, and the Yakimas, should develop functional design drawings of a downstream fish migrant bypass facility including an operation and maintenance plan. Further consultation and the availability of results of studies of downstream bypass designs at Little Goose dam and at Lower Granite dam would allow the licensee to develop an appropriate bypass design to safely and efficiently pass downstream migrants. Important considerations in any bypass design include debris removal, which would be facilitated by an open-flume design, and the location of the bypass exit. Releasing downstream migrants in slack water areas would subject them to predation and could delay their downstream migration.

To ensure that the intake fish screens and downstream migrant bypass facilities are fully protective of juvenile anadromous fishes, the licensee, after consultation with the Corps, the state and federal fish and wildlife agencies, the Tribes, and the Yakimas, should develop and implement a plan to monitor the effectiveness of these facilities. The licensee should include in the plan provisions for rapidly altering project operation, if needed to protect downstream migrants, for example, by reducing flow diversions for project operation or shutting down the project. The licensee also should file an implementation schedule, a schedule for filing the results with the Commission and with the consulted agencies, the Tribes, and the Yakimas, and recommendations for changes in project facilities or project operation based on monitoring results. In addition, the licensee should permit personnel from the consulted entities, upon showing proper credentials, to inspect the fish screens, the downstream fish bypass facilities, related project records, and other fish and wildlife protective measures, upon showing proper credentials.

Unavoidable Adverse Impacts: Construction activities would cause short-term increases in turbidity that could affect upstream fish passage on a short-term basis. Although some minor levels of injury or mortality of downstream migrant salmonid juveniles might result from contact with the project's intake fish screens and bypass facility, provisions for monitoring the effectiveness of these facilities in protecting the fishery resources, including provisions for rapidly altering project operation, would reduce unavoidable impacts to minor levels.

4. Threatened and Endangered Species

Affected Environment: The bald eagle (*Haliaeetus leucocephalus*) and the peregrine falcon (*Falco peregrinus*) are the only federally listed threatened or endangered species that may occur within or near the project area (personal communication, Diana Hwang, Fish and Wildlife Biologist, U.S. Fish and Wildlife Service, Department of the Interior, Portland, Oregon, November 5, 1987). Peregrine falcons occur as seasonal migrants and may overwinter in the Columbia River area; however, no nesting sites have been reported in the project area. Bald eagles may occur in the area during the wintering season from about October 31 through March 31, but no sightings at the Dalles dam have been reported (personal communication, Diana Hwang, Fish and Wildlife Biologist, U.S. Fish and Wildlife Service, Department of the Interior, Portland, Oregon, November 5, 1987).

Environmental Impacts and Recommendations: The proposed project would not affect either the food supply or roosting sites and day perches of the bald eagle. Although the bald eagle consumes birds, waterfowl, and fish (Federal Energy Regulatory Commission, 1987), because of the limited habitat value of the project area, the proposed project would not affect waterfowl populations or habitat for other bird prey species. Similarly, the food source of the peregrine falcon, which consists of avian prey, would be unaffected. Given the recommended mitigative measures discussed previously in section V.A.3. for the fishery resources, there would be no impacts to the bald eagle's fish food supply. As the project area has been previously disturbed and provides no reported roosting or perching sites, the proposed project would not affect roosting sites and day perches.

The applicant has not decided whether the 12.5-kV transmission line from the powerhouse to the Dalles bridge would be above ground or underground. As the transmission line is within the 4 to 69-kV range that poses the greatest threat of electrocution of raptors, including bald eagles and peregrine falcons, the licensee should develop a transmission line design plan to prevent raptor electrocutions associated with the transmission line, should the final project design include the provision of an above-ground transmission line. This plan should be prepared in accordance with guidelines in the 1981 publication, "Suggested Practices for Raptor Protection on Power Lines," Raptor Research Report No. 4, published by the Raptor Research Foundation, Inc.

Unavoidable Adverse Impacts: None.

5. Cultural Resources

Affected Environment: No properties have been identified in the project area as listed on or eligible for listing on the National Register of Historic Places (letter from Robert G. Whitlam, State Archeologist, Office of Archeology and Historic Preservation, Olympia, Washington, December 12, 1983).

Environmental Impacts and Recommendations: Land-clearing and land-disturbing activities could adversely affect archeological and historic properties not previously identified in the project area. Therefore, if the licensee encounters such properties during the development of project works or related facilities, the licensee should stop land-clearing and land-disturbing activities in the vicinity of the properties and should consult with the State

Historic Preservation Officer (SHPO) about the eligibility of the properties and about any measures needed to avoid or to mitigate effects on the properties. In addition, before beginning land-clearing or land-disturbing activities within the project boundaries, other than those specifically authorized in the license, the licensee should consult with the SHPO about the need to conduct an archeological or historical survey and the need for avoidance or mitigative measures. In these instances, 60 days before starting such land-clearing or land-disturbing activities, the licensee should file a plan and a schedule for conducting the appropriate studies, along with a copy of the SHPO's written comments concerning the plan and the schedule. The licensee should not start land-clearing or land-disturbing activities, other than those specifically authorized in this license, or resume such activities in the vicinity of an archeological or historic property discovered during construction, until informed that the requirements discussed above have been fulfilled.

Unavoidable Adverse Impacts: None.

6. Cumulative Impacts

The WDF, WDW, and the Tribes state that there must be an evaluation of the cumulative effects caused by the presence and operation of the proposed Dalles Dam North Fishway Hydroelectric Project and of other projects in the Columbia River Basin.

The Council estimates that in the basin, long-term, cumulative adverse impacts associated with hydropower development, irrigation, fishing, logging, mining, grazing, urbanization, and pollution, have caused the loss of 7 of 14 million salmon and steelhead annually (Federal Energy Regulatory Commission, 1987). The Council attributes the loss of 5 to 11 million anadromous fish to the development and operation of the 136 hydropower projects in the basin, and states that the majority of these losses are associated with mainstem Columbia River dams (Federal Energy Regulatory Commission, 1987).

The BPA, the Bureau of Reclamation, the Corps, the NMFS, the Forest Service, the states of Oregon, Washington, and Idaho, and numerous Indian tribes in the Columbia River Basin are spending millions of dollars annually to restore the anadromous fishery resource. Any increase in the production of salmon and steelhead above the Dalles dam will have to pass by the Dalles dam, both as juveniles and as adults, and could be subject to the impacts of the Dalles Dam North Fishway Hydroelectric Project. As a result, the proposed project could affect (1) the fishery resources of the Salmon River Basin of

Idaho; (2) the fishery improvements of the Bureau of Reclamation's Yakima River Basin Enhancement Project; (3) fishery improvements associated with the lower Snake River Compensation Plan and the Idaho Power Company Hells Canyon Complex settlement; (4) the efforts of the Grant County Public Utility District under the mid-Columbia settlement agreement; (5) the hatchery program of the Douglas County Public Utility District at Wells dam; (6) the fishway improvements at Tumwater and Dryden dams; and (7) additional fisheries mitigation programs of the Program. Thus, the construction and operation of the Dalles Dam North Fishway Hydroelectric Project could contribute to cumulative adverse impacts on the existing fishery resources of the Columbia River Basin and to future improvements in production resulting from the myriad fishery mitigative programs in the basin.

The staff believes that it would be contradictory to allow further development in the Columbia River Basin, if that development would negate the potential for success of these fishery improvement projects. Thus, the staff recommends that mitigative measures outlined in sections V.A.2, and 3, be included as conditions of any license issued for the project, and that the licensee be required to demonstrate, through postlicense monitoring, that the project would not contribute to cumulative adverse impacts on existing and future fishery resources in the Columbia River Basin.

B. Alternative of No Action

Implementing the no-action alternative would not alter the existing physical or biological components of the area, but would preclude the use of renewable water resources of the AWSS to generate electricity.

C. Recommended Alternative

The proposed project is the preferred alternative because electricity would be generated from a renewable resource, thus lessening the use of existing fossil-fueled, steam-electric plants, and because the environmental effects that would result from constructing and operating the project would not be major and would be adequately mitigated.

VI. FINDING OF NO SIGNIFICANT IMPACT

Construction of the proposed project would result in minor, short-term increases in turbidity levels in the Columbia River downstream from the north ladder. Operation of the project would result in the injury or mortality of some downstream migrating salmonid juveniles,

but recommended mitigative measures would reduce these losses to minor levels.

The project would not affect any federally listed threatened or endangered species nor any sites or structures listed on or eligible for listing on the National Register of Historic Places.

This environmental assessment was prepared in accordance with the National Environmental Policy Act of 1969. On the basis of the record and of the staff's independent environmental analysis, issuance of a license for the Dalles Dam North Fishway Hydroelectric Project would not constitute a major federal action significantly affecting the quality of the human environment.

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VIII. LIST OF PREPARERS

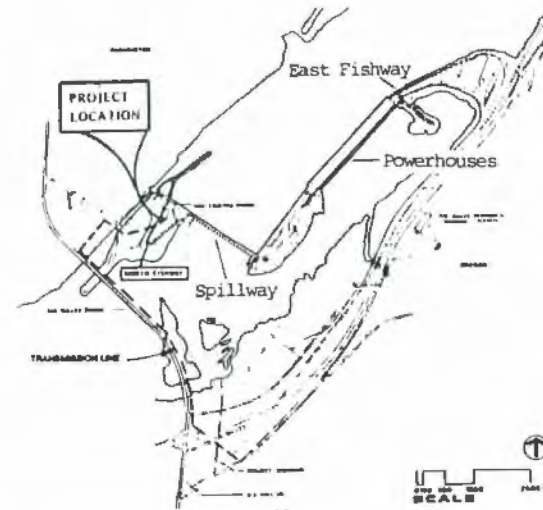
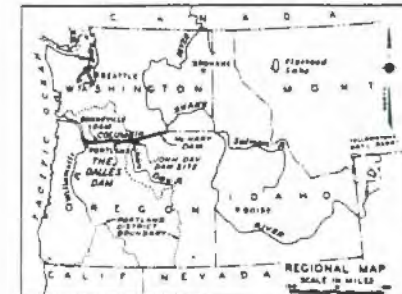
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Alan D. Mitchnick--Threatened and Endangered Species (Wildlife Biologist; M.S., Wildlife and Fisheries Sciences).

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SAFETY AND DESIGN ASSESSMENT DALLES DAM NORTH FISHWAY HYDROELECTRIC PROJECT

Figure 1. Project location for the proposed Dalles Dam North Fishway Hydroelectric Project, FERC No. 7076, Washington (Source: the staff, as modified from the Department of the Army, Portland and Walla Walla Districts, Corps of Engineers, 1984, and from Northern Wasco County People's Utility District, 1985, application, exhibit G).

SAFETY AND DESIGN ASSESSMENT
DALLES DAM NORTH FISHWAY HYDROELECTRIC PROJECT
FERC NO. 7076-002--WA

2

DAM SAFETY

The proposed project would be located at the United States Army Corps of Engineers Dalles Dam on the Columbia River in Klickitat County, Washington.

Spillway adequacy and dam safety are the responsibility of the United States Army Corps of Engineers. Special Articles regarding the construction and operation of the proposed project are recommended for inclusion in the license to protect the interest of the Corps of Engineers. The proposed project structures would be safe and adequate if constructed in accordance with sound engineering practice and the requirements of this license.

CONSIDERATION OF COUNCIL'S POWER PLAN

Staff has reviewed the Northwest Power Planning Council's (Council) 1986 Power Plan to determine if the project is consistent. The Council's Plan envisions meeting the growing regional energy requirements in the most economical manner with environmentally acceptable resources. The Plan considers any environmentally acceptable resource, that is less expensive than coal-fueled steam electric generation, as an acceptable resource for development before the development of coal-fueled power plants (the Council's planned marginal resource).

Staff has developed life-cycle costs of energy from the Council's planned generic coal plant, assumed to be needed in the year 2002 under the Council's medium-high load growth assumption, for determining if proposed hydroelectric projects are, in the long term, consistent with the Council's plan, as required by section 10(a) 2 of the Federal Power Act.

Since the life-cycle levelized cost of the proposed project is less, as of its projected on-line date, than the levelized life-cycle cost of the least cost or marginal long term alternative, included in the plan, the proposed project is not inconsistent with the Council's 1986 Power Plan, and is economically feasible within the long term objectives of the Plan.

ECONOMIC FEASIBILITY

A proposed project is economically feasible so long as its projected levelized cost is less than the long-term levelized cost of alternative energy to any utility in the region that can be served by the project.

Staff has calculated the projected levelized alternative energy cost in the region to be 76.3 mills/kWh. This cost is based upon the cost of a generic coal-fueled steam electric plant forecasted by the Northwest Power Planning Council in its proposed resource portfolios to come on-line about the year 2002. The estimated levelized cost of energy from the Dalles Dam North Fishway Project is 51.2 mills/kWh, therefore the project is economically feasible.

WATER RESOURCE PLANNING

The proposed project's single horizontal francis turbine would have a total installed capacity of 4,200-kW. The plant would utilize flows from the Auxiliary Water Supply System (AWSS) to the North Fishway at the Dalles Dam. The turbine would be capable of utilizing flows ranging from approximately 220 cfs to 730 cfs under an average head of 76 feet. Staff has reviewed the historical flow data contained in the application for 1975 to 1983 and estimates the average flow through the AWSS to be 805 cfs. The proposed project design is considered preliminary in nature since it is based upon the Corps of Engineers historical operation of the AWSS. The applicant was aware, when the application was prepared, of the Corps possible revision of the operational criteria of the AWSS. The current operational criteria of the Corps includes closure of the AWSS during the months of December, January, and February if fish attraction flows are unnecessary. Therefore, the Corps can not guarantee flows in the AWSS for power production during the winter months. Based on this operational scheme, the proposed project would generate an estimated 25,250,000 kWh of electrical energy annually.

A special article is included in the license to require the applicant to submit a study, for approval, of the feasibility of the installation of additional capacity at the site based on the Corps current operational criteria for the AWSS. If the study shows that the installation of additional capacity is feasible an amendment of license must be filed with the Commission prior to the start of construction.

By letter dated February 14, 1986, the U.S. Army Corps of Engineers (Corps) had several comments concerning the proposed project at the Dalles Dam. Staff has reviewed the comments and feels that the standard articles developed in the Memorandum of Agreement between the FERC and the Corps should be included in any license issued and adequately protects the Corps interest in the Dalles Dam. The applicant intends to have the Corps operate and maintain the North Fishway Project. A special article is

recommended to enable the Corps to obtain funding from the applicant for any expenses incurred if they accept the responsibility for the operation and maintenance of the project. If however, the Corps rejects the responsibility for the operation and maintenance of the project, the responsibility would be assumed by the applicant.

The 1966 Planning Status Report for the Lower Columbia River Basin includes the existing Corps of Engineers Dalles Dam facility. The proposed project would utilize the AWSS of the Corps facility to generate electricity in accordance with the Corps normal operation of the Dalles Dam.

Review of State and Federal Agency comments and the June 20, 1985 State of Oregon Water Use Programs formulated by the Water Resources Commission, indicates that the proposed project is not in conflict with any existing or planned water resource in the basin. No specific comments or recommendations were made addressing flood control, water supply, or irrigation requirements at the Dalles Dam on the Columbia River.

In summary, our analysis shows that the proposed North Fishway Project adequately develops the hydroelectric potential of the site and would not conflict with any existing or planned water resource developments in the basin.

EXHIBITS

The following sections of Exhibit A and Exhibit F drawings conform to the Commission's rules and regulations and should be included in the license.

Exhibit A. Sections (i), (v), (vi) of the application filed on April 26, 1985.

| <u>Exhibit</u> | <u>FERC NO. 7076 -</u> | <u>Description</u> |
|----------------|------------------------|------------------------------|
| F-1 | 7076 - 3 | General Plan |
| F-2 | 7074 - 4 | Intake Channel Plan |
| F-3 | 7076 - 5 | Intake Channel Section |
| F-4 | 7076 - 6 | Fish Screen Panel |
| F-5 | 7076 - 7 | Fish Screen Panel Section |

| <u>Exhibit</u> | <u>FERC NO. 7076 -</u> | <u>Description</u> |
|----------------|------------------------|------------------------------------|
| F-6 | 7076 - 8 | Powerhouse Plan |
| F-7 | 7076 - 9 | Powerhouse Longitudinal Section |

FEDERAL POWER COMMISSION

TERMS AND CONDITIONS OF LICENSE FOR
UNCONSTRUCTED MAJOR PROJECT
AFFECTING LANDS OF THE UNITED STATES

Article 1. The entire project, as described in this order of the Commission, shall be subject to all of the provisions, terms, and conditions of the license.

Article 2. No substantial change shall be made in the maps, plans, specifications, and statements described and designated as exhibits and approved by the Commission in its order as a part of the license until such change shall have been approved by the Commission: Provided, however, That if the Licensee or the Commission deems it necessary or desirable that said approved exhibits, or any of them, be changed, there shall be submitted to the Commission for approval a revised, or additional exhibit or exhibits covering the proposed changes which, upon approval by the Commission, shall become a part of the license and shall supersede, in whole or in part, such exhibit or exhibits theretofore made a part of the license as may be specified by the Commission.

Article 3. The project works shall be constructed in substantial conformity with the approved exhibits referred to in Article 2 herein or as changed in accordance with the provisions of said article. Except when emergency shall require for the protection of navigation, life, health, or property, there shall not be made without prior approval of the Commission any substantial alteration or addition not in conformity with the approved plans to any dam or other project works under the license or any substantial use of project lands and waters not authorized herein; and any emergency alteration, addition, or use so made shall thereafter be subject to such modification and change as the Commission may direct. Minor changes in project works, or in uses of project lands and waters, or divergence from such approved exhibits may be made if such changes will not result in a decrease in efficiency, in a material increase in cost, in an adverse environmental impact, or in impairment of the general scheme of development; but any of such minor changes made without the prior approval of the Commission, which in its judgment have produced or will produce any of such results, shall be subject to such alteration as the Commission may direct.

Upon the completion of the project, or at such other time as the Commission may direct, the Licensee shall submit to the Commission for approval revised exhibits insofar as necessary to show any divergence from or variations in the project area and project boundary as finally located or in the project works as actually constructed when compared with the area and boundary shown and the works described in the license or in the exhibits approved by the Commission, together with a statement in writing setting forth the reasons which in the opinion of the Licensee necessitated or justified variation in or divergence from the approved exhibits. Such revised exhibits shall, if and when approved by the Commission, be made a part of the license under the provisions of Article 2 hereof.

Article 4. The construction, operation, and maintenance of the project and any work incidental to additions or alterations shall be subject to the inspection and supervision of the Regional Engineer, Federal Power Commission, in the region wherein the project is located, or of such other officer or agent as the Commission may designate, who shall be the authorized representative of the Commission for such purposes. The Licensee shall cooperate fully with said representative and shall furnish him a detailed program of inspection by the Licensee that will provide for an adequate and qualified inspection force for construction of the project and for any subsequent alterations to the project. Construction of the project works or any feature or alteration thereof shall not be initiated until the program of inspection for the project works or any such feature thereof has been approved by said representative. The Licensee shall also furnish to said representative such further information as he may require concerning the construction, operation, and maintenance of the project, and of any alteration thereof, and shall notify him of the date upon which work will begin, as far in advance thereof as said representative may reasonably specify, and shall notify him promptly in writing of any suspension of work for a period of more than one week, and of its resumption and completion. The Licensee shall allow said representative and other officers or employees of the United States, showing proper credentials, free and unrestricted access to, through, and across the project lands and project works in the performance of their official duties. The Licensee shall comply with such rules and regulations of general or special applicability as the Commission may prescribe from time to time for the protection of life, health, or property.

Article 5. The Licensee, within five years from the date of issuance of the license, shall acquire title in fee or the right to use in perpetuity all lands, other than lands of the United States, necessary or appropriate for the construction, maintenance, and operation of the project. The Licensee or its successors and assigns shall, during the period of the license, retain the possession of all project property covered by the license as issued or as later amended, including the project area, the project works, and all franchises, easements, water rights, and rights of occupancy and use; and none of such properties shall be voluntarily sold, leased, transferred, abandoned, or otherwise disposed of without the prior written approval of the Commission, except that the Licensee may lease or otherwise dispose of interests in project lands or property without specific written approval of the Commission pursuant to the then current regulations of the Commission. The provisions of this article are not intended to prevent the abandonment or the retirement from service of structures, equipment, or other project works in connection with replacements thereof when they become obsolete, inadequate, or inefficient for further service due to wear and tear; and mortgage or trust deeds or judicial sales made thereunder, or tax sales, shall not be deemed voluntary transfers within the meaning of this article.

Article 6. In the event the project is taken over by the United States upon the termination of the license as provided in Section 14 of the Federal Power Act, or is transferred to a new licensee or to a non-power licensee under the provisions of Section 15 of said Act, the Licensee, its successors and assigns shall be responsible for, and shall make good any defect of title to, or of right of occupancy and use in, any of such project property that is necessary or appropriate or valuable and serviceable in the maintenance and operation of the project, and shall pay and discharge, or shall assume responsibility for payment and discharge of, all liens or encumbrances upon the project or project property created by the Licensee or created or incurred after the issuance of the license: Provided, That the provisions of this article are not intended to require the Licensee, for the purpose of transferring the project to the United States or to a new licensee, to acquire any different title to, or right of occupancy and use in, any of such project property than was necessary to acquire for its own purposes as the Licensee.

Article 7. The actual legitimate original cost of the project, and of any addition thereto or betterment thereof, shall be determined by the Commission in accordance with the Federal Power Act and the Commission's Rules and Regulations thereunder.

Article 8. The Licensee shall install and thereafter maintain gages and stream-gaging stations for the purpose of determining the stage and flow of the stream or streams on which the project is located, the amount of water held in and withdrawn from storage, and the effective head on the turbines; shall provide for the required reading of such gages and for the adequate rating of such stations; and shall install and maintain standard meters adequate for the determination of the amount of electric energy generated by the project works. The number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, shall at all times be satisfactory to the Commission or its authorized representative. The Commission reserves the right, after notice and opportunity for hearing, to require such alterations in the number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, as are necessary to secure adequate determinations. The installation of gages, the rating of said stream or streams, and the determination of the flow thereof, shall be under the supervision of, or in cooperation with, the District Engineer of the United States Geological Survey having charge of stream-gaging operations in the region of the project, and the Licensee shall advance to the United States Geological Survey the amount of funds estimated to be necessary for such supervision, or cooperation for such periods as may be mutually agreed upon. The Licensee shall keep accurate and sufficient records of the foregoing determinations to the satisfaction of the Commission, and shall make return of such records annually at such time and in such form as the Commission may prescribe.

Article 9. The Licensee shall, after notice and opportunity for hearing, install additional capacity or make other changes in the project as directed by the Commission, to the extent that it is economically sound and in the public interest to do so.

Article 10. The Licensee shall, after notice and opportunity for hearing, coordinate the operation of the project, electrically and hydraulically, with such other projects or power systems and in such manner as the Commission may direct in the interest of power and other beneficial public uses of water resources, and on such conditions concerning the equitable sharing of benefits by the Licensee as the Commission may order.

Article 11. Whenever the Licensee is directly benefited by the construction work of another licensee, a permittee, or the United States on a storage reservoir or other headwater improvement, the Licensee shall reimburse the owner of the headwater improvement for such part of the annual charges for interest, maintenance, and depreciation thereof as the Commission shall determine to be equitable, and shall pay to the United States the cost of making such determination as fixed by the Commission. For benefits provided by a storage reservoir or other headwater improvement of the United States, the Licensee shall pay to the Commission the amounts for which it is billed from time to time for such headwater benefits and for the cost of making the determinations pursuant to the then current regulations of the Commission under the Federal Power Act.

Article 12. The operations of the Licensee, so far as they affect the use, storage and discharge from storage of waters affected by the license, shall at all times be controlled by such reasonable rules and regulations as the Commission may prescribe for the protection of life, health, and property, and in the interest of the fullest practicable conservation and utilization of such waters for power purposes and for other beneficial public uses, including recreational purposes, and the Licensee shall release water from the project reservoir at such rate in cubic feet per second, or such volume in acre-feet per specified period of time, as the Commission may prescribe for the purposes hereinbefore mentioned.

Article 13. On the application of any person, association, corporation, Federal agency, State or municipality, the Licensee shall permit such reasonable use of its reservoir or other project properties, including works, lands and water rights, or parts thereof, as may be ordered by the Commission, after notice and opportunity

for hearing, in the interests of comprehensive development of the waterway or waterways involved and the conservation and utilization of the water resources of the region for water supply or for the purposes of steam-electric, irrigation, industrial, municipal or similar uses. The Licensee shall receive reasonable compensation for use of its reservoir or other project properties or parts thereof for such purposes, to include at least full reimbursement for any damages or expenses which the joint use causes the Licensee to incur. Any such compensation shall be fixed by the Commission either by approval of an agreement between the Licensee and the party or parties benefiting or after notice and opportunity for hearing. Applications shall contain information in sufficient detail to afford a full understanding of the proposed use, including satisfactory evidence that the applicant possesses necessary water rights pursuant to applicable State law, or a showing of cause why such evidence cannot concurrently be submitted, and a statement as to the relationship of the proposed use to any State or municipal plans or orders which may have been adopted with respect to the use of such waters.

Article 14. In the construction or maintenance of the project works, the Licensee shall place and maintain suitable structures and devices to reduce to a reasonable degree the liability of contact between its transmission lines and telegraph, telephone and other signal wires or power transmission lines constructed prior to its transmission lines and not owned by the Licensee, and shall also place and maintain suitable structures and devices to reduce to a reasonable degree the liability of any structures or wires falling or obstructing traffic or endangering life. None of the provisions of this article are intended to relieve the Licensee from any responsibility or requirement which may be imposed by any other lawful authority for avoiding or eliminating inductive interference.

Article 15. The Licensee shall, for the conservation and development of fish and wildlife resources, construct, maintain, and operate, or arrange for the construction, maintenance, and operation of such reasonable facilities, and comply with such reasonable modifications of the project structures and operation, as may be ordered by the Commission upon its own motion or upon the recommendation of the Secretary of the Interior or the fish and wildlife agency or agencies of any State in which the project or a part thereof is located, after notice and opportunity for hearing.

Article 16. Whenever the United States shall desire, in connection with the project, to construct fish and wildlife facilities or to improve the existing fish and wildlife facilities at its own expense, the Licensee shall permit the United States or its designated agency to use, free of cost, such of the Licensee's lands and interests in lands, reservoirs, waterways and project works as may be reasonably required to complete such facilities or such improvements thereof. In addition, after notice and opportunity for hearing, the Licensee shall modify the project operation as may be reasonably prescribed by the Commission in order to permit the maintenance and operation of the fish and wildlife facilities constructed or improved by the United States under the provisions of this article. This article shall not be interpreted to place any obligation on the United States to construct or improve fish and wildlife facilities or to relieve the Licensee of any obligation under this license.

Article 17. The Licensee shall construct, maintain, and operate, or shall arrange for the construction, maintenance, and operation of such reasonable recreational facilities, including modifications thereto, such as access roads, wharves, launching ramps, beaches, picnic and camping areas, sanitary facilities, and utilities, giving consideration to the needs of the physically handicapped, and shall comply with such reasonable modifications of the project, as may be prescribed hereafter by the Commission during the term of this license upon its own motion or upon the recommendation of the Secretary of the Interior or other interested Federal or State agencies, after notice and opportunity for hearing.

Article 18. So far as is consistent with proper operation of the project, the Licensee shall allow the public free access, to a reasonable extent, to project waters and adjacent project lands owned by the Licensee for the purpose of full public utilization of such lands and waters for navigation and for outdoor recreational purposes, including fishing and hunting: Provided, That the Licensee may reserve from public access such portions of the project waters, adjacent lands, and project facilities as may be necessary for the protection of life, health, and property.

Article 19. In the construction, maintenance, or operation of the project, the Licensee shall be responsible for, and shall take reasonable measures to prevent, soil erosion on lands adjacent to streams or other waters, stream sedimentation, and any form of water or air pollution. The Commission, upon request or upon its own motion, may order the Licensee to take such measures as the Commission finds to be necessary for these purposes, after notice and opportunity for hearing.

Article 20. The Licensee shall consult with the appropriate State and Federal agencies and, within one year of the date of issuance of this license, shall submit for Commission approval a plan for clearing the reservoir area. Further, the Licensee shall clear and keep clear to an adequate width lands along open conduits and shall dispose of all temporary structures, unused timber, brush, refuse, or other material unnecessary for the purposes of the project which results from the clearing of lands or from the maintenance or alteration of the project works. In addition, all trees along the periphery of project reservoirs which may die during operations of the project shall be removed. Upon approval of the clearing plan all clearing of the lands and disposal of the unnecessary material shall be done with due diligence and to the satisfaction of the authorized representative of the Commission and in accordance with appropriate Federal, State, and local statutes and regulations.

Article 21. Timber on lands of the United States cut, used, or destroyed in the construction and maintenance of the project works, or in the clearing of said lands, shall be paid for, and the resulting slash and debris disposed of, in accordance with the requirements of the agency of the United States having jurisdiction over said lands. Payment for merchantable timber shall be at current stumpage rates, and payment for young growth timber below merchantable size shall be at current damage appraisal values. However, the agency of the United States having jurisdiction may sell or dispose of the merchantable timber to others than the Licensee: Provided, That timber so sold or disposed of shall be cut and removed from the area prior to, or without undue interference with, clearing operations of the Licensee and in coordination with the Licensee's project construction schedules. Such sale or disposal to others shall not relieve the Licensee of responsibility for the clearing and disposal of all slash and debris from project lands.

Article 22. The Licensee shall do everything reasonably within its power, and shall require its employees, contractors, and employees of contractors to do everything reasonably within their power, both independently and upon the request of officers of the agency concerned, to prevent, to make advance preparations for suppression of, and to suppress fires on the lands to be occupied or used under the license. The Licensee shall be liable for and shall pay the costs incurred by the United States in suppressing fires caused from the construction, operation, or maintenance of the project works or of the works appurtenant or accessory thereto under the license.

Article 23. The Licensee shall interpose no objection to, and shall in no way prevent, the use by the agency of the United States having jurisdiction over the lands of the United States affected, or by persons or corporations occupying lands of the United States under permit, of water for fire suppression from any stream, conduit, or body of water, natural or artificial, used by the Licensee in the operation of the project works covered by the license, or the use by said parties of water for sanitary and domestic purposes from any stream, conduit, or body of water, natural or artificial, used by the Licensee in the operation of the project works covered by the license.

Article 24. The Licensee shall be liable for injury to, or destruction of, any buildings, bridges, roads, trails, lands, or other property of the United States, occasioned by the construction, maintenance, or operation of the project works or of the works appurtenant or accessory thereto under the license. Arrangements to meet such liability, either by compensation for such injury or destruction, or by reconstruction or repair of damaged property, or otherwise, shall be made with the appropriate department or agency of the United States.

Article 25. The Licensee shall allow any agency of the United States, without charge, to construct or permit to be constructed on, through, and across those project lands which are lands of the United States such conduits, chutes, ditches, railroads, roads, trails, telephone and power lines, and other routes or means of transportation and communication as are not inconsistent with the enjoyment

of said lands by the Licensee for the purposes of the license. This license shall not be construed as conferring upon the Licensee any right of use, occupancy, or enjoyment of the lands of the United States other than for the construction, operation, and maintenance of the project as stated in the license.

Article 26. In the construction and maintenance of the project, the location and standards of roads and trails on lands of the United States and other uses of lands of the United States, including the location and condition of quarries, borrow pits, and spoil disposal areas, shall be subject to the approval of the department or agency of the United States having supervision over the lands involved.

Article 27. The Licensee shall make provision, or shall bear the reasonable cost, as determined by the agency of the United States affected, of making provision for avoiding inductive interference between any project transmission line or other project facility constructed, operated, or maintained under the license, and any radio installation, telephone line, or other communication facility installed or constructed before or after construction of such project transmission line or other project facility and owned, operated, or used by such agency of the United States in administering the lands under its jurisdiction.

Article 28. The Licensee shall make use of the Commission's guidelines and other recognized guidelines for treatment of transmission line rights-of-way, and shall clear such portions of transmission line rights-of-way across lands of the United States as are designated by the officer of the United States in charge of the lands; shall keep the areas so designated clear of new growth, all refuse, and inflammable material to the satisfaction of such officer; shall trim all branches of trees in contact with or liable to contact the transmission lines; shall cut and remove all dead or leaning trees which might fall in contact with the transmission lines; and shall take such other precautions against fire as may be required by such officer. No fires for the burning of waste material shall be set except with the prior written consent of the officer of the United States in charge of the lands as to time and place.

Article 29. The Licensee shall cooperate with the United States in the disposal by the United States, under the Act of July 31, 1947, 61 Stat. 681, as amended (30 U.S.C. sec. 601, et seq.), of mineral and vegetative materials from lands of the United States occupied by the project or any part thereof: Provided, That such disposal has been authorized by the Commission and that it does not unreasonably interfere with the occupancy of such lands by the Licensee for the purposes of the license: Provided further, That in the event of disagreement, any question of unreasonable interference shall be determined by the Commission after notice and opportunity for hearing.

Article 30. If the Licensee shall cause or suffer essential project property to be removed or destroyed or to become unfit for use, without adequate replacement, or shall abandon or discontinue good faith operation of the project or refuse or neglect to comply with the terms of the license and the lawful orders of the Commission mailed to the record address of the Licensee or its agent, the Commission will deem it to be the intent of the Licensee to surrender the license. The Commission, after notice and opportunity for hearing, may require the Licensee to remove any or all structures, equipment and power lines within the project boundary and to take any such other action necessary to restore the project waters, lands, and facilities remaining within the project boundary to a condition satisfactory to the United States agency having jurisdiction over its lands or the Commission's authorized representative, as appropriate, or to provide for the continued operation and maintenance of nonpower facilities and fulfill such other obligations under the license as the Commission may prescribe. In addition, the Commission in its discretion, after notice and opportunity for hearing, may also agree to the surrender of the license when the Commission, for the reasons recited herein, deems it to be the intent of the Licensee to surrender the license.

Article 31. The right of the Licensee and of its successors and assigns to use or occupy waters over which the United States has jurisdiction, or lands of the United States under the license, for the purpose of maintaining the project works or otherwise, shall absolutely cease at the end of the license period, unless the Licensee has obtained a new license pursuant to the then existing laws and regulations, or an annual license under the terms and conditions of this license.

Article 32. The terms and conditions expressly set forth in the license shall not be construed as impairing any terms and conditions of the Federal Power Act which are not expressly set forth herein.

A.2 NMFS Biological Opinion



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
1201 NE Lloyd Boulevard, Suite 1100
PORTLAND, OREGON 97232-1274

December 19, 2011

VIA ELECTRONIC FILING

Refer to NMFS No:
2008/01301

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Re: Endangered Species Act Section 7 and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for Northern Wasco County PUD's North Shore Hydroelectric Project (FERC No. 7076-033) at The Dalles Dam in the Columbia River

Dear Secretary Bose:

Enclosed is National Marine Fisheries Services Endangered Species Act Biological Opinion, Incidental Take Statement, and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for Northern Wasco County PUD's North Shore Hydroelectric Project.

Sincerely,

For
William W. Stelle, Jr.
Regional Administrator

Enclosure

cc: Service List
Dwight Langor, Northern Wasco Co. PUD – The Dalles
Rick Martinson, PSMFC – The Dalles



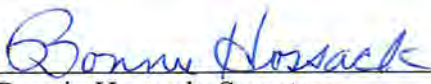
**UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION**

| | |
|--|-------------------------------------|
| Endangered Species Act Section 7 Consultation |) North Shore Hydroelectric Project |
| |) FERC No. 7076-033 |
| Northern Wasco County |) |
| <u>People's Utility District</u> |) |

CERTIFICATE OF SERVICE

I hereby certify that I have this day served, by electronic mail, a letter to Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission, from National Marine Fisheries Service regarding Biological Opinion for the North Shore Hydroelectric Project, FERC No. 7076 (NMFS Consultation No. 2008/01301) and the foregoing document and this Certificate of Service has been served to each person designated on the official service list compiled by the Commission in the above captioned proceeding.

Dated on December 19, 2011


 Bonnie Hossack, Secretary
 FERC and Water Diversions Branch
 Hydropower Division

Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat (EFH) Consultation

Northern Wasco County PUD's North Shore Hydroelectric Project (FERC No. 7076) at The Dalles Dam in the Columbia River (RM 191.5), Sixth Field HUC 170701050406, Wasco County, Washington

NMFS Consultation Number: 2008/01301

Action Agency: Federal Energy Regulatory Commission (FERC)

Affected Species and Determinations:

| ESA-Listed Species | Status | Is Action Likely to Adversely Affect Species or Critical Habitat? | Is Action Likely To Jeopardize the Species? | Is Action Likely To Destroy or Adversely Modify Critical Habitat? |
|--|------------|---|---|---|
| Snake River fall Chinook (<i>Oncorhynchus tshawytscha</i>) | Threatened | Yes | No | No |
| Snake River spring/summer Chinook (<i>O. tshawytscha</i>) | Threatened | Yes | No | No |
| Upper Columbia River spring Chinook (<i>O. tshawytscha</i>) | Endangered | Yes | No | No |
| Snake River sockeye (<i>O. nerka</i>) | Endangered | Yes | No | No |
| Snake River steelhead (<i>O. mykiss</i>) | Threatened | Yes | No | No |
| Upper Columbia River steelhead (<i>O. mykiss</i>) | Threatened | Yes | No | No |
| Middle Columbia River steelhead (<i>O. mykiss</i>) | Threatened | Yes | No | No |
| Southern Resident killer whale (<i>Orcinus orca</i>) | Endangered | No | No | No |

| Fishery Management Plan That Describes EFH in the Project Area | Does Action Have an Adverse Effect on EFH? | Are EFH Conservation Recommendations Provided? |
|--|--|--|
| Pacific Coast Salmon | No | No |

Consultation Conducted By: National Marine Fisheries Service, Northwest Region

Issued By:

A handwritten signature in blue ink, appearing to read 'W. W. Stelle, Jr.', is written over a horizontal line.

William W. Stelle, Jr.
Regional Administrator

Date: December 19, 2011

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Acronyms and Abbreviations

| | |
|----------|--|
| | |
| AWS | Auxiliary Water System |
| BA | Biological Assessment |
| °C | Celsius |
| CFS | Cubic Feet per Second |
| DPS | Distinct Population Segment |
| DQA | Data Quality Act |
| EFH | Essential Fish Habitat |
| ESA | Endangered Species Act |
| ESU | Evolutionarily Significant Unit |
| FCRPS | Federal Columbia River Power System |
| FERC | Federal Energy Regulatory Commission |
| FWS | U.S. Fish and Wildlife Service |
| ICTRT | Interior Columbia Technical Recovery Team |
| ISAB | Independent Scientific Advisory Board |
| ITS | Incidental Take Statement |
| MCR | Middle Columbia River |
| MPG | Major Population Group |
| MSA | Magnuson-Stevens Fishery Conservation and Management Act |
| NMFS | National Marine Fisheries Service |
| PCE | Primary Constituent Element |
| PFMC | Pacific Fishery Management Council |
| PIT-TAGS | Passive Integrated Transponder Tags |
| PUD | People's Utility District |
| RM&E | Research, Monitoring, & Evaluation |
| R/S | Recruits-Per-Spawner |
| RPA | Reasonable and Prudent Alternative |
| RPM | Reasonable and Prudent Measures |
| SR | Snake River |
| UCR | Upper Columbia River |
| USFWS | U.S. Fish and Wildlife Services |
| VSP | Viable Salmonid Populations |

1. INTRODUCTION

This Introduction section provides information relevant to the other sections of this document and is incorporated by reference into Sections 2 and 3 below.

1.1 Background

The biological opinion (opinion) and incidental take statement portions of this document were prepared by the National Marine Fisheries Service (NMFS) in accordance with Section 7(b) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531, et seq.), and implementing regulations at 50 CFR 402.

NMFS also completed an Essential Fish Habitat (EFH) consultation. It was prepared in accordance with Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. 1801, et seq.) and implementing regulations at 50 CFR 600.

The opinion is in compliance with section 515 of the Treasury and General Government Appropriations Act of 2001 (Public Law 106-5444) (“Data Quality Act”) and underwent pre-dissemination review.

The Northern Wasco County People’s Utility District (PUD) owns and operates a hydroelectric project located on the north shore of The Dalles Dam. It is called the North Shore Fishway Hydroelectric Project, FERC Project No. 7076 (the Project).

1.2 Consultation History

This biological opinion is based on information provided in the January 31, 2008 biological assessment (FERC 2008), October 2010 Report entitled Fish Passage Monitoring of the North Shore Fishway Hydroelectric Project at The Dalles Dam (Martinson 2010), and e-mail exchanges (March 15, 2011, from Rick Martinson, to Michelle Day, NMFS (Martinson 2011a); May 10, 2011, from Rick Martinson, to Michelle Day, NMFS (Martinson 2011b). The Project began operating in 1991. Fish monitoring activities have been conducted under the authority of an ESA Section 10 permit for the Smolt Monitoring Program for the Federal Columbia River Power System in 1992 and annual permits issued by NMFS’ under Section 10(a)(1)(A) of the ESA from 1994 through 2006. Sampling times were shifted to avoid collection of ESA listed species in 1993, so that no permit was required for that year. No sampling was conducted in 2007, but occurred from 2008 through 2010 with NMFS agreement that this was allowed for the purpose of describing the effects of the project while the PUD was engaged in ESA consultation. A complete record of this consultation is on file at the NMFS’ Northwest Regional Office in Portland, Oregon. The opinion covers the term of the Federal Energy Regulatory Commission (FERC) license, which expires 2037.

1.3 Proposed Action

The Proposed Action is the implementation of a plan to monitor the effectiveness of fish screens and of the downstream fish bypass facility required by the North Shore Hydroelectric Project FERC license. “Action” means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies. FERC is the Federal action agency for this consultation. While the January 31, 2008, biological assessment from FERC focused solely on the PUD’s fish sampling and monitoring program, the proposed action analyzed in this opinion is the continued operation of the FERC licensed project which has not previously undergone consultation. The Project consists of the existence and operation of a fish screened turbine, its intake and outfall, the fish bypass pipe, and monitoring of the fish screen and bypass facility. The Project is located at The Dalles Dam near the spillway and the North Fish Ladder (Figure 1).

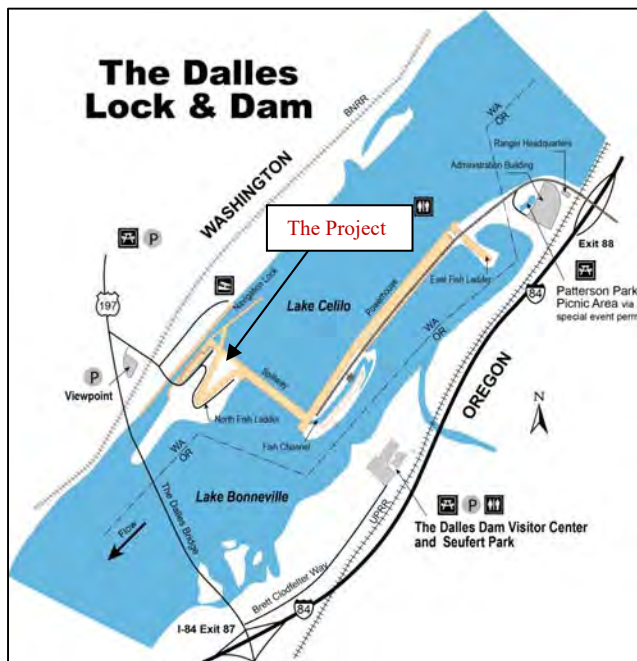


Figure 1. The Dalles Dam with arrow pointing to area of the Project
(From www.nwp.usace.army.mil/locations/thedalles.asp)

The Project turbine is powered by about 800 cubic feet per second (cfs) from the forebay of The Dalles Dam, which prior to the PUD’s turbine construction, was delivered through a series of energy dissipating plunge pools to the auxiliary water system (AWS) for the adult fish ladder. So, in addition to the generation of power, the project is responsible for regulation of flow to the north shore adult fish ladder entrance at The Dalles Dam (owned and operated by the U.S. Army Corps of Engineers). The AWS system supplements the flow coming down the fish ladder to create the required differential at the entrance to the ladder. As part of the agreement to use this water to generate electricity, the PUD assumed responsibility for maintaining required differentials at the north shore fish ladder entrance.

The PUD directs that flow into a 150-foot long screened dewatering structure (the Fingerling Bypass) that separates the juvenile fish from the unit's penstock flow (Figure 2). The 21-foot by 105-foot fish screen is made of 1/8 inch stainless steel vertical bar stock spaced 1/8 inch apart. This vertical wall screen extends the length of the dewatering structure and is oriented diagonally, tapering down to about a 24 inch width across the floor at its exit,



Figure 2. Intake structure looking downstream. (Emergency gates to left)

The last 20 feet of the structure features an ascending floor to further direct fish to the exit where a weir gate monitors the dewatering structure channel elevation to maintain a pre-set differential. When smolts are not being sampled, it is set to maintain a one-foot differential between channel elevation and the top of the weir gate. This provides 10 to 12 cfs of discharge flow. Flow from the weir gate drops into a 6 foot by 10 foot by 20-foot deep plunge pool that exits to a 24-inch hard plastic bypass pipe. That 1500-foot pipe carries the flow from the fish weir gate plunge pool to its outflow 30 feet downstream from the N1 fish ladder entrance in the tailrace (Figure 3).



Figure 3. Fish bypass outfall at tailrace entrance to N1 ladder

During the smolt sampling period (one 24 hour period per week from April through July), the depth at the weir is reduced to about 0.2 foot to reduce turbulence in the sample collection tank.

The vertical wall screen has one vertical cleaning brush arm that moves along the length of the screen, cleaning it to the point where the floor starts ascending toward the exit. The screens in the ascending floor section are cleaned by two wiper type brushes. All cleaners are operated manually each week prior to sampling and are set to operate automatically if the differential

between water elevations in front of the screen compared to that behind is greater than six inches. To protect juvenile fish, the screens are baffled progressively over the length of the structure to maintain a uniform dewatering rate (through screen velocity of 0.4 foot per second or less)

The intake structure trash racks are $\frac{3}{4}$ inch steel bar stock with a $\frac{7}{8}$ inch spacing to prevent large trash and adult fish from entering the intake.

Since the unit went on line in 1991, annual evaluations of passage conditions have been conducted every year except 2007. Evaluations are based on the condition of the sampled fish; if they are uninjured, it is assumed that the bypass system is in good condition and passing fish safely. This monitoring is stipulated in the FERC issued Project license. The FERC license stipulates, "... a plan to monitor the effectiveness of the fish screens and of the downstream fish bypass facility is required". The monitoring program is scheduled to occur during the middle 80 percent of the juvenile salmon migration (April through July). The dates are based on data generated by the Smolt Monitoring Program at John Day Dam (available through the Fish Passage Center, Portland, Oregon or at www.fpc.org).

Fish samples to evaluate the dewatering structure fish screens and passage conditions are collected by placing the collection tank under the fish weir gate outflow and over the fish weir plunge pool (Figure 4). The water depth over the weir is reduced from about 1 foot to 0.2 foot to reduce the turbulence in the collection tank. The tank is fitted with baffles which create a sanctuary area at the downstream end of the tank (to the right in Figure 4). Excess water drains out through perforated plates on the sides and upstream end of the tank.



Figure 4. Position of fish collection tank during smolt sampling

To process the sample, the water level in the tank is lowered and about 180 ml of MS-222 are added to mildly sedate the fish for transfer to an examination sink containing more MS-222. The fish are examined once fully anesthetized. Data collected includes identification to species, size (fork length), condition (percent of scale loss), injuries or symptoms of disease, and operational information such as mainstem forebay elevation, flow rate, and water temperature at the time of collection. Fish are allowed to recover from the effects of the anesthesia before being returned to the river via the bypass outfall pipe. Sampling operations on a specific day depend on mainstem flow conditions: no sampling would be scheduled when forebay levels are anticipated to be below minimum operating level (elevation 156 feet 6 inches) for the PUD's fish sampling apparatus. When postponed, an alternate sampling day may be scheduled during the same week. The objective of the fish monitoring is to evaluate the passage conditions for ESA listed species in the dewatering structure of the PUD hydroplant. As described in the Biological Assessment BA, these tasks are:

1. Sample fish during one 24 hour per week period throughout the monitoring season, April through July.
2. Report sample totals by species.
3. Collect descaling and mortality information by species.
4. Collect length and condition data.
5. Collect forebay elevation and flow data for sample days.
6. Conduct data analysis and verification as needed to insure accurate data.
7. Generate and submit reports and applications in accordance with scheduled deadlines.
8. Conduct project fish facility inspections and consult with PUD staff or agency personnel on fish related issues as needed.

Interrelated actions are those that are part of a larger action and depend on the larger action for their justification (50 CFR § 402.02). Interdependent actions are those that have no independent utility apart from the action under consideration. Although this proposed action is related to The Dalles Dam and the larger Federal Columbia River Hydropower System (FCRPS), the Northern Wasco County PUD's North Shore Hydroelectric Project, Project No. 7076-033 has independent utility and therefore is not an interrelated or interdependent with the FCRPS. NMFS has not identified any interrelated or interdependent actions for this proposed action.

1.4 Action Area

"Action area" means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02).

The action area is immediately downstream of the trash racks for the auxiliary water intake for the North Fish Ladder to the outflow of the Fingerling Bypass, including the generator outfall in the ladder and the sluice gates emergency auxiliary water supply into the ladder (Figure 5). This is the area within which any direct or indirect effects would occur. Effects beyond the adult ladder are so small that the effects are undetectable. The action area does include all the different components that could impact listed fish: trash racks, screen, outfall into adult ladder, bypass, monitoring tank, and outfall into the tailrace.

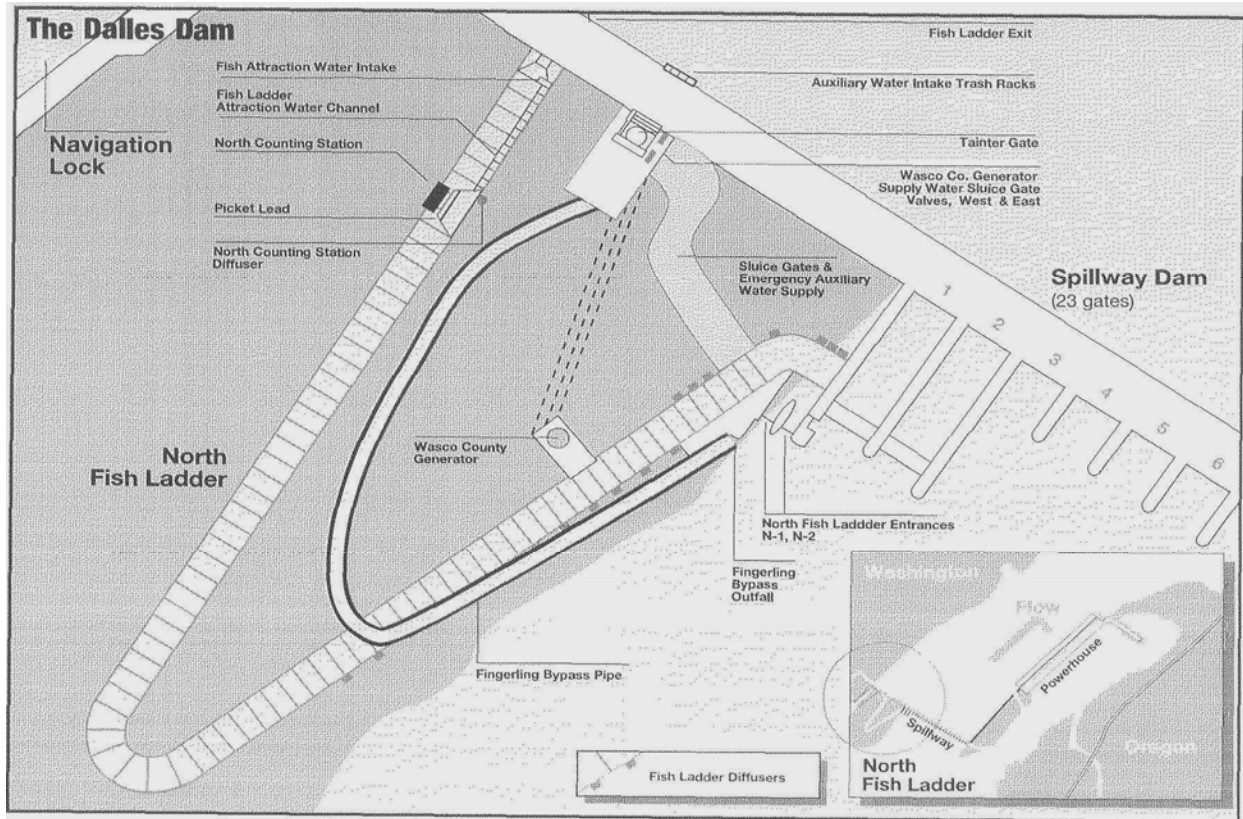


Figure 5. Northern Wasco County PUD Hydroplant Footprint

1.5 Southern Resident Killer Whales

The proposed action may indirectly affect prey available to Southern Resident killer whales (*Orcinus orca*), a marine mammal species that was listed as endangered in 2005 (NMFS 2005a), with critical habitat designated in 2006 (NMFS 2006a). Informal consultation on this species is described in Section 2.11 “Not Likely to Adversely Affect” Determinations.

2. ENDANGERED SPECIES ACT: BIOLOGICAL OPINION AND INCIDENTAL TAKE STATEMENT

The ESA establishes a national program for conserving threatened and endangered species of fish, wildlife, plants, and the habitat on which they depend. Section 7(a)(2) of the ESA requires Federal agencies to consult with the United States Fish and Wildlife Service (FWS), NMFS, or both, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or adversely modify or destroy their designated critical habitat. Section 7(b)(3) requires that at the conclusion of consultation, FWS, NMFS, or both, provide an opinion stating how the agencies’ actions will affect listed species or their critical habitat. If incidental take is expected, Section 7(b)(4) requires the provision of an incidental take statement (ITS) specifying the impact of any incidental taking, and including reasonable and prudent measures to minimize such impacts.

2.1 Introduction to the Biological Opinion

Section 7(a)(2) of the ESA requires Federal agencies, in consultation with NMFS, to insure that their actions are not likely to jeopardize the continued existence of endangered or threatened species, or adversely modify or destroy their designated critical habitat. The jeopardy analysis considers both survival and recovery of the species. The adverse modification analysis considers the impacts to the conservation value of the designated critical habitat.

“To jeopardize the continued existence of a listed species” means to engage in an action that would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR 402.02).

This biological opinion does not rely on the regulatory definition of 'destruction or adverse modification' of critical habitat at 50 C.F.R. 402.02. Instead, we have relied upon the statutory provisions of the ESA to complete the following analysis with respect to critical habitat (NMFS 2005b).

We will use the following approach to determine whether the proposed action described in Section 1.3 is likely to jeopardize listed species or destroy or adversely modify critical habitat:

- *Identify the rangewide status of the species and critical habitat likely to be adversely affected by the proposed action.* This section describes the current status of each listed species and its critical habitat relative to the conditions needed for recovery. For listed salmon and steelhead, NMFS has developed specific guidance for analyzing the status of the listed species' component populations in a “viable salmonid populations” paper (VSP; McElhany et al. 2000). The VSP approach considers the abundance, productivity, spatial structure, and diversity of each population as part of the overall review of a species' status. For listed salmon and steelhead, the VSP criteria therefore encompass the species' “reproduction, numbers, or distribution” (50 CFR 402.02). In describing the range-wide status of listed species, we rely on viability assessments and criteria in technical recovery team documents and recovery plans, where available, that describe how VSP criteria are applied to specific populations, major population groups, and species. We determine the rangewide status of critical habitat by examining the condition of its physical or biological features (also called “primary constituent elements” or PCEs in some designations) - which were identified when the critical habitat was designated. Species and critical habitat status are discussed in Section 2.2.
- *Describe the environmental baseline for the proposed action.* The environmental baseline includes the past and present impacts of Federal, state, or private actions and other human activities *in the action area*. It includes the anticipated impacts of proposed Federal projects that have already undergone formal or early Section 7 consultation and the impacts of state or private actions that are contemporaneous with the consultation in process. The environmental baseline is discussed in Section 2.3 of this opinion.
- *Analyze the effects of the proposed actions.* In this step, NMFS considers how the proposed action would affect the species' reproduction, numbers, and distribution or, in the case of salmon and steelhead, their VSP characteristics. NMFS also evaluates the proposed action's effects on critical habitat features. The effects of the action are described in Section 2.4 of this opinion.

- *Describe any cumulative effects.* Cumulative effects, as defined in NMFS' implementing regulations (50 CFR 402.02), are the effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area. Future Federal actions that are unrelated to the proposed action are not considered because they require separate Section 7 consultation. Cumulative effects are considered in Section 2.5 of this opinion.
- *Integrate and synthesize the above factors to assess the risk that the proposed action poses to species and critical habitat.* In this step, NMFS adds the effects of the action (Section 2.4) to the environmental baseline (Section 2.3) and the cumulative effects (Section 2.5) to assess whether the action could reasonably be expected to: (1) appreciably reduce the likelihood of both survival and recovery of the species in the wild by reducing its numbers, reproduction, or distribution; or (2) reduce the value of designated or proposed critical habitat for the conservation of the species. These assessments are made in full consideration of the status of the species and critical habitat (Section 2.2). Integration and synthesis occurs in Section 2.6 of this opinion.
- *Reach jeopardy and adverse modification conclusions.* Conclusions regarding jeopardy and the destruction or adverse modification of critical habitat are presented in Section 2.7. These conclusions flow from the logic and rationale presented in the Integration and Synthesis Section (2.6).
- *If necessary, define a reasonable and prudent alternative to the proposed action.* If, in completing the last step in the analysis, NMFS determines that the action under consultation is likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat, NMFS must identify a reasonable and prudent alternative (RPA) to the action in Section 2.8. The RPA must not be likely to jeopardize the continued existence of ESA-listed species nor adversely modify their designated critical habitat and it must meet other regulatory requirements.

2.2 Rangewide Status of the Species and Critical Habitat

The following ESA-listed anadromous fish species¹ are present in the action area for this consultation:

Snake River fall Chinook salmon (*Oncorhynchus tshawytscha*)
 Snake River spring/summer Chinook salmon (*O. tshawytscha*)
 Upper Columbia River spring Chinook salmon (*O. tshawytscha*)
 Snake River sockeye salmon (*O. nerka*)
 Snake River steelhead (*O. mykiss*)
 Upper Columbia River steelhead (*O. mykiss*)
 Middle Columbia River steelhead (*O. mykiss*)

The biological requirements, life histories, historical abundance, current viability, and factors contributing to the decline of these salmon and steelhead species have been well documented. The following sections summarize the rangewide status of each species and its designated critical habitat from recent technical reports, most of which are available on the Web sites for NMFS' Northwest Regional Office or Northwest Fisheries Science Center (e.g., see Ford et al. 2010; and NMFS 2005c and 2006).

¹ An "evolutionarily significant unit" (ESU) of Pacific Salmon (Waples 1991) and a "distinct population segment" (DPS) of steelhead (NMFS 2006b) are considered to be "species" as defined in Section 3 of the ESA.

Snake River Fall Chinook Salmon

Species Overview

Background

The Snake River (SR) fall Chinook salmon ESU includes fish spawning in the lower mainstem of the Snake River and the lower reaches of several of the associated major tributaries including the Tucannon, the Grande Ronde, Clearwater, Salmon and Imnaha Rivers, as well as four artificial propagation programs: the Lyons Ferry Hatchery, Fall Chinook Acclimation Ponds Program, Nez Perce Tribal Hatchery, and Oxbow Hatchery fall-run Chinook hatchery programs. On August 15, 2011, NMFS completed a five-year review for the SR fall Chinook ESU and concluded that the species should remain listed as threatened (NMFS 2011).

Historically, this ESU included two large additional populations spawning in the mainstem of the Snake River upstream of the Hells Canyon Dam complex. The decline of this ESU was due to heavy fishing pressure beginning in the 1890s and loss of habitat with the construction of Swan Falls Dam in 1901 and the Hells Canyon Complex from 1958 to 1967, which extirpated two of the historical populations. The spawning and rearing habitat associated with the current extant population represents approximately 20 percent of the total historical habitat available to the ESU (Ford et al. 2010).

Current Status & Recent Trends

Abundance and productivity estimates for the single remaining population of Snake River Fall Chinook salmon have improved substantially relative to the time of listing. However, the current combined estimates of abundance and productivity population still result in a moderate risk of extinction of between 5 and 25 percent in 100 years. The extant population of Snake River Fall Chinook is the only remaining from an historical ESU that also included large mainstem populations upstream of the current location of the Hells Canyon Dam complex. The recent increases in natural origin abundance are encouraging. However, hatchery origin spawner proportions have increased dramatically in recent years – on average, 78 percent of the estimated adult spawners have been hatchery origin over the most recent brood cycle (Ford et al. 2010).

Limiting Factors and Threats

Limiting factors for SR fall Chinook include mainstem hydroelectric projects in the Columbia and Snake rivers, predation, harvest, hatcheries, the estuary, and tributary habitat. Ocean conditions have also affected the status of this ESU. Generally, ocean conditions have been poor for this ESU over the past 20 years, improving only recently.

Recent Ocean and Mainstem Harvest

Snake River fall Chinook have a very broad ocean distribution and have been taken in ocean salmon fisheries from central California through southeast Alaska. They are also harvested in-river in tribal and non-tribal fisheries. Historically they were subject to total exploitation rates on the order of 80 percent. Since they were originally listed in 1992, fishery impacts have been reduced in both ocean and river fisheries. Ocean fisheries have been required since 1996, through ESA consultation, to achieve a 30 percent reduction in the average exploitation rate observed during the 1988 to 1993 base period. In recent years, about 14 percent of the incidental take has occurred in the southeast Alaska fishery, about 23 percent in the Canadian fishery (primarily off the west coast of Vancouver Island), about 20 percent in the coastal fishery

(primarily off Washington, and to a lesser degree off Oregon and Northern California), about 11 percent in the non-Treaty fishery in the Columbia River, and about 30 percent in the Columbia River tribal treaty-right fishery. Total exploitation rate has been relatively stable in the range of 40 percent to 50 percent since the mid-1990s (Ford et al. 2010).

Rangewide Status of Critical Habitat

Designated critical habitat for SR fall Chinook salmon includes all Columbia River estuarine areas and river reaches proceeding upstream to the confluence of the Columbia and Snake rivers; all Snake River reaches from the confluence of the Columbia River upstream to Hells Canyon Dam; the Palouse River from its confluence with the Snake River upstream to Palouse Falls; the Clearwater River from its confluence with the Snake River upstream to its confluence with Lolo Creek; and the North Fork Clearwater River from its confluence with the Clearwater River upstream to Dworshak Dam. Critical habitat also includes river reaches presently or historically accessible (except those above impassable natural falls and Dworshak and Hells Canyon dams) in the following subbasins: Clearwater, Hells Canyon, Imnaha, Lower Grande Ronde, Lower North Fork Clearwater, Lower Salmon, Lower Snake, Lower Snake-Asotin, Lower Snake-Tucannon, and Palouse. The lower Columbia River corridor is among the areas of high conservation value to the ESU because it connects every population with the ocean and is used by rearing/migrating juveniles and migrating adults. The Columbia River estuary is a unique and essential area for juveniles and adults making the physiological transition between life in freshwater and marine habitats. Designated areas consist of the water, waterway bottom, and the adjacent riparian zone (defined as an area 300 feet from the normal high water line on each side of the river channel) (NMFS 1993).

Snake River Spring/Summer Chinook Salmon

Species Overview

Background

The Snake River Spring-Summer Chinook salmon ESU includes all naturally spawned populations of spring/summer-run Chinook salmon in the mainstem Snake River and the Tucannon River, Grande Ronde River, Imnaha River, and Salmon River subbasins, as well as fifteen artificial propagation programs. On August 15, 2011 NMFS completed a five-year review for the SR spring/summer Chinook salmon ESU and concluded that the species should remain listed as threatened (NMFS 2011). The ESU was first listed under the ESA in 1992, and the listing was reaffirmed in 2005.

Current Status & Recent Trends

The SR spring/summer Chinook's five major population groups (MPGs) are further composed of 28 extant populations. Although natural spawning abundance estimates have increased, all populations remain below minimum natural origin abundance thresholds. Relatively low natural production rates and spawning levels below minimum abundance thresholds remain a major concern across the ESU. The ability of populations to be self-sustaining through normal periods of relatively low ocean survival remains uncertain (Ford et al. 2010).

Limiting Factors and Threats

Limiting factors for the Snake River spring/summer Chinook include the Federal and private hydropower projects, predation, harvest, the estuary, and tributary habitat. Ocean conditions have also affected the status of this ESU. These conditions have been generally poor for this ESU over the last four brood cycles, improving only in the last few years. Although hatchery management is not identified as a limiting factor for the ESU as a whole, the Interior Columbia Technical Recovery Team (ICTRT) has indicated potential hatchery impacts for a few individual populations.

Recent Ocean and Mainstem Harvest

The ocean fishery mortality on Snake River spring/summer Chinook is very low and, for practical purposes, assumed to be zero. Incidental take of Snake River spring/summer Chinook occurs in spring and summer season fisheries in the mainstem Columbia River that target harvestable hatchery and natural-origin stocks. All harvest occurs in the lower portion of the mainstem Columbia River. Snake River summer Chinook share the ocean distribution patterns of the upper basin spring runs and are only subject to significant harvest in the mainstem Columbia River. Harvest of summer Chinook has been more constrained than that of spring Chinook with consequently lower exploitation rates on the summer component of this ESU. Harvest rates on the aggregate runs of up-river spring and summer Chinook salmon were generally reduced in the 1970s in response to abrupt declines in returns of naturally produced fish. The fisheries on harvestable runs were limited to ensure that incidental take of ESA-listed Snake River spring/summer Chinook does not exceed a rate of from 5.5 to 17 percent. The incidental take of natural-origin upriver spring/summer Chinook has averaged around 10 percent since 2001.

Rangewide Status of Critical Habitat

Designated critical habitat for SR spring/summer Chinook salmon includes all Columbia River estuarine areas and river reaches proceeding upstream to the confluence of the Columbia and Snake rivers, and all Snake River reaches from the confluence of the Columbia River upstream to Hells Canyon Dam (NMFS 1999). Critical habitat also includes river reaches presently or historically accessible (except those above impassable natural falls, including Napias Creek Falls, and Dworshak and Hells Canyon dams) in the following subbasins: Hells Canyon, Imnaha, Lemhi, Little Salmon, Lower Grande Ronde, Lower Middle Fork Salmon, Lower Salmon, Lower Snake-Asotin, Lower Snake-Tucannon, Middle Salmon-Chamberlain, Middle Salmon-Panther, Pahsimeroi, South Fork Salmon, Upper Middle Fork Salmon, Upper Grande Ronde, Upper Salmon, and Wallowa. The lower Columbia River corridor is among the areas of high conservation value to the ESU because it connects every population with the ocean and is used by rearing/migrating juveniles and migrating adults. The Columbia River estuary is a unique and essential area for juveniles and adults making the physiological transition between life in freshwater and marine habitats. Designated areas consist of the water, waterway bottom, and the adjacent riparian zone (defined as an area 300 feet from the normal high water line on each side of the river channel) (NMFS 1999). Designation did not involve rating the conservation value of specific watersheds as was done in subsequent designations (NMFS 2005d).

Upper Columbia River Spring Chinook Salmon

Species Overview

Background

The Upper Columbia River (UCR) Spring-run Chinook Salmon (ESU) includes naturally spawning spring-run Chinook salmon in the major tributaries entering the Columbia River upstream of Rock Island Dam and the associated hatchery programs. On August 15, 2011, NMFS completed a five-year review for the UCR spring Chinook salmon ESU and concluded that the species should remain listed as endangered (NMFS 2011).

Current Status & Recent Trends

The Upper Columbia Spring Chinook ESU is not currently meeting the viability criteria (adapted from the ICTRT) in the Upper Columbia Recovery Plan. Abundance for most populations declined to extremely low levels in the mid-1990s, increased to levels above (Wenatchee and Methow) or near (Entiat) the recovery abundance thresholds in the early 2000s, however, average productivity levels remain extremely low (Ford et al. 2010).

Limiting Factors and Threats

The key limiting factors and threats for the UCR spring Chinook include hydropower projects, predation, harvest, hatchery effects, degraded estuary habitat, and degraded tributary habitat. Risk due to spatial structure is low for the Wenatchee and Methow River populations and moderate for the Entiat populations due to loss of production in lower section, which increases the effective distance² to other populations. All three of the extant populations are rated at high risk for diversity, driven primarily by chronically high proportions of hatchery-origin spawners in natural spawning areas and lack of genetic diversity among the natural-origin spawners (ICTRT 2008).

Recent Ocean and Mainstem Harvest Rates

The ocean fishery mortality affecting Upper Columbia River spring Chinook is low, due to migration patterns, which have minimal intersection with ocean fisheries, and for practical purposes, assumed to be zero. Incidental take occurs in spring season fisheries in the mainstem Columbia River, which are intended to target harvestable hatchery and natural-origin stocks. Under the 2008 *U.S. v. Oregon* harvest agreement, the mainstem fishery is currently limited to assure that incidental take does not exceed 5.5 to 17 percent. Exploitation rates have remained relatively low, generally below 10 percent, though they have been allowed to increase in recent years in response to record returns of hatchery spring Chinook to the Columbia River basin (Ford et al. 2010).

Rangewide Status of Critical Habitat

Designated critical habitat for UCR spring Chinook includes all Columbia River estuarine areas and river reaches proceeding upstream to Chief Joseph Dam as well as specific stream reaches in the following subbasins: Chief Joseph, Methow, Upper Columbia/Entiat, and Wenatchee (NMFS 2005d). Of the 31 watersheds within the range of this ESU, NMFS' Critical Habitat Analytical Review Teams rated the conservation value of five as medium and 26 as high (NMFS 2005d). The Columbia River rearing/migration corridor downstream of the spawning range is considered

² Effective distance: loss of fish in lower sections means that the distance between populations increases; thus the likelihood of straying between them decreases, reducing demographic and genetic linkages.

to have a high conservation value and is the only habitat area designated in 15 of the high value watersheds identified above. This corridor connects every population with the ocean and is used by rearing/migrating juveniles and migrating adults.

Snake River Sockeye Salmon

Species Overview

Background

The ESU includes all anadromous and residual sockeye salmon from the Snake River Basin, Idaho, as well as artificially propagated sockeye salmon from the Redfish Lake captive propagation program. On August 15, 2011, NMFS completed a five-year review for the SR sockeye salmon ESU and concluded that the species should remain listed as endangered (NMFS 2011).

Sockeye salmon were historically numerous in many areas of the Snake River basin prior to the European westward expansion. However, intense commercial harvest of sockeye along with other salmon species beginning in the mid-1880s; the existence of Sunbeam Dam as a migration barrier between 1910 and the early 1930s; the eradication of sockeye from Sawtooth Valley lakes in the 1950s and 1960s; the development of mainstem hydropower projects on the lower Snake and Columbia Rivers in the 1970s and 1980s; and poor ocean conditions in 1977 through the late 1990s probably combined to reduce the stock to a very small remnant population. Snake River sockeye salmon are now found predominantly in a captive broodstock program associated with Redfish and the other Sawtooth Valley lakes. At the time of listing in 1991, one, one, and zero fish had returned to Redfish Lake in the three preceding years, respectively.

Current Status & Recent Trends

This species has a very high risk of extinction. Between 1991 and 1998, all 16 of the natural-origin adult sockeye salmon that returned to the weir at Redfish Lake were incorporated into the captive broodstock program. The program has used multiple rearing sites to minimize chances of catastrophic loss of broodstock and has produced several hundred thousand eggs and juveniles, as well as several hundred adults, for release into the wild. Between 1999 and 2007, more than 355 adults returned from the ocean from captive broodstock releases—almost 20 times the number of wild fish that returned in the 1990s. The program has been successful in its goals of preserving important lineages of Redfish Lake sockeye salmon for genetic variability and in preventing extinction in the near-term. Adult returns in 2008 and 2009 were the highest since the current captive brood-based program began with a total of 650 and 809 adults counted back to the Stanley Basin.

Limiting Factors and Threats

By the time Snake River Sockeye were listed in 1991, the species had declined to the point that there was no longer a self-sustaining, naturally spawning anadromous sockeye population. This has been the largest factor limiting the recovery of this ESU, important in terms of both risks due to catastrophic loss and potentially to genetic diversity. It is not yet clear whether the existing population retains sufficient genetic diversity to successfully adapt to the range of variable conditions that occur within its natural habitat. However, unpublished data from geneticists for the Stanley Basin Sockeye Technical Oversight Committee indicate that the captive broodstock has similar levels of haplotype diversity as other sockeye populations in the Pacific Northwest

and that the program has been able to maintain rare alleles in the population over time. The broodstock program reduces the risk of domestication by using a spread-the-risk strategy, outplanting prespawning adults and fertilized eyed eggs as well as juveniles raised in the hatchery. The progeny of adults that spawn in the lakes and juveniles that hatch successfully from the eyed eggs are likely to have adapted to the lake environment rather than become “domesticated” to hatchery rearing conditions.

Recent Ocean and Mainstem Harvest

Few sockeye are caught in ocean fisheries. Ocean fisheries do not significantly impact Snake River sockeye. Within the mainstem Columbia River, treaty tribal net fisheries and non-tribal fisheries directed at Chinook salmon do incidentally take small numbers of sockeye. Most of the sockeye harvested are from the Upper Columbia River (Canada and Lake Wenatchee), but very small numbers of Snake River sockeye are taken incidental to summer fisheries directed at Chinook salmon.

Current Rangewide Status of Critical Habitat

Designated critical habitat for SR sockeye salmon includes all Columbia River estuarine areas and river reaches proceeding upstream to the confluence of the Columbia and Snake rivers; all Snake River reaches from the confluence of the Columbia River upstream to the confluence of the Salmon River; all Salmon River reaches from the confluence of the Snake River upstream to Alturas Lake Creek; Stanley, Redfish, Yellow Belly, Pettit, and Alturas lakes (including their inlet and outlet creeks); Alturas Lake Creek; and that portion of Valley Creek between Stanley Lake Creek and the Salmon River (NMFS 1993). The lower Columbia River corridor is among the areas of high conservation value to the ESU because it connects every population with the ocean and is used by rearing/migrating juveniles and migrating adults. The Columbia River estuary is a unique and essential area for juveniles and adults making the physiological transition between life in freshwater and marine habitats. Designated areas consist of the water, waterway bottom, and the adjacent riparian zone (defined as an area 300 feet from the normal high water line on each side of the river channel) (NMFS 1993). Designation did not involve rating the conservation value of specific watersheds as was done in subsequent designations (NMFS 2005d).

Snake River Steelhead

Species Overview

Background

The Snake River steelhead DPS includes all anadromous populations that spawn and rear in the mainstem Snake River and its tributaries between Ice Harbor and the Hells Canyon hydro complex, as well as six artificial propagation programs: the Tucannon River, Dworshak NFH, Lolo Creek, North Fork Clearwater, East Fork Salmon River, and the Little Sheep Creek/Imnaha River Hatchery steelhead hatchery programs. There are five major population groups with 24 populations. On August 15, 2011, NMFS completed a five-year review for the SR steelhead DPS and concluded that the species should remain listed as threatened (NMFS 2011).

Fisheries managers classify Columbia River summer run steelhead into two aggregate groups, A-run and B-run, based on ocean age at return, adult size at return and migration timing. A-run steelhead are predominately spend one year at sea and are assumed to be associated with low to

mid-elevation streams throughout the Interior Columbia basin. B-run steelhead are larger with most individuals returning after 2 years in the ocean. Snake River steelhead are classified as summer run based on their adult run timing patterns. Much of the freshwater habitat used by Snake River steelhead for spawning and rearing is warmer and drier than that associated with other steelhead DPSs. Snake River steelhead spawn and rear as juveniles across a wide range of freshwater temperature/precipitation regimes. A-run steelhead are believed to occur throughout the steelhead streams in the Snake River Basin, and B-run are thought to produce only in the Clearwater and Salmon rivers. This DPS was listed under the ESA as threatened in 1997, reaffirmed in 2006.

Current Status & Recent Trends

Population-level natural origin abundance and productivity inferred from aggregate data and juvenile indices indicate that many populations are likely below the minimum combinations defined by the ICTRT viability criteria and the status of most populations in this DPS remains highly uncertain. A great deal of uncertainty also remains regarding the relative proportion of hatchery fish in natural spawning areas near major hatchery release sites (Ford et al. 2010).

Limiting Factors and Threats

Limiting factors identify the most important biological requirements of the species. Historically, the key limiting factors for the Snake River steelhead include hydropower projects, predation, harvest, hatchery effects, and tributary habitat. Ocean conditions have also affected the status of this DPS. These generally have been poor over at least the last 20 years, improving only in the last few years.

Recent Ocean and Mainstem Harvest

Few steelhead are caught in ocean fisheries. Ocean fishing mortality on Snake River steelhead is assumed to be zero. Steelhead were historically taken in tribal and non-tribal gillnet fisheries, and in recreational fisheries in the mainstem Columbia River and in tributaries. In the 1970s, retention of steelhead in non-tribal commercial fisheries was prohibited, and in the mid-1980s, tributary recreational fisheries in Washington adopted mark-selective regulations. Steelhead are still harvested in tribal fisheries, in mainstem recreational fisheries, and there is incidental mortality associated with mark-selective recreational fisheries. The majority of impacts on the summer run occur in tribal gillnet and dip net fisheries targeting Chinook salmon. Because of their larger size, the B-run fish are more vulnerable to the gillnet gear. Consequently, this component of the summer run experiences higher fishing mortality than the A-run component. In recent years, total exploitation rates on the A-run have been stable at around 5 percent, while exploitation rates on the B-run have generally been in the range of 15 to 20 percent. (Ford et al 2010).

Current Rangewide Status of Critical Habitat

Designated critical habitat for SR steelhead includes all Columbia River estuarine areas and river reaches proceeding upstream to the confluence of the Columbia and Snake rivers as well as specific stream reaches in the following subbasins: Hells Canyon, Imnaha River, Lower Snake/Asotin, Upper Grande Ronde River, Wallowa River, Lower Grande Ronde, Lower Snake/Tucannon, Lower Snake River, Upper Salmon, Pahsimeroi, Middle Salmon-Panther, Lemhi, Upper Middle Fork Salmon, Lower Middle Fork Salmon, Middle Salmon-Chamberlain,

South Fork Salmon, Lower Salmon, Little Salmon, Upper Selway, Lower Selway, Lochsa, Middle Fork Clearwater, South Fork Clearwater, and Clearwater (NMFS 2005d). There are 289 watersheds within the range of this DPS. Fourteen watersheds received a low rating, 44 received a medium rating, and 231 received a high rating of conservation value to the DPS. The lower Snake/Columbia River rearing/migration corridor downstream of the spawning range is considered to have a high conservation value and is the only habitat area designated in 15 of the high value watersheds identified above. This corridor connects every population with the ocean and is used by rearing/migrating juveniles and migrating adults. The Columbia River estuary is a unique and essential area for juveniles and adults making the physiological transition between life in freshwater and marine habitats. Of the 8,225 miles of habitat areas eligible for designation, 8,049 miles of stream are designated critical habitat.

Upper Columbia River Steelhead

Species Overview

Background

The Upper Columbia River Steelhead DPS includes all naturally spawned anadromous *O. mykiss* (steelhead) populations below natural and manmade impassable barriers in streams in the Columbia River Basin upstream from the Yakima River, Washington, to the US-Canada border, as well as six artificial propagation programs: the Wenatchee River, Wells Hatchery (in the Methow and Okanogan Rivers), Winthrop NFH, Omak Creek and the Ringold steelhead hatchery programs. On August 15, 2011, NMFS completed a five-year review for the UCR steelhead DPS and concluded that the species should remain listed as threatened (NMFS 2011).

Hatchery steelhead have been released into the Methow and Okanogan since the late 1960s and into the Wenatchee and Entiat systems since the 1970s. Through the 1980s, operations were designed to accommodate harvest and there was no attempt to limit introgression of hatchery fish into the native populations. In many cases, the hatchery broodstock originated from outside the upper Columbia area. Naturally spawning hatchery fish were not adapted to local conditions, which most likely limited their effectiveness and depressed the production of the population as a whole. While there is no precise means to measure the full effect of these practices, they likely contributed substantially to the current low recruits-per-spawner (R/S) productivities for naturally spawning fish.

Since the early 1990s, hatchery programs that operate in the Wenatchee, Methow, and Okanogan basins have implemented reforms to support steelhead conservation and recovery. No hatchery fish are released into the Entiat and the hatchery broodstocks in other watersheds are now composed exclusively of steelhead from the Upper Columbia River DPS. The hatchery programs are managed to preserve natural genetic resources.

Current Status & Recent Trends

Upper Columbia River steelhead is a species composed of the anadromous *O. mykiss* in four extant populations in one major population group (MPG). For all populations, abundance over the most recent 10-year period is below the thresholds that the ICTRT has identified as a minimum for recovery. Upper Columbia River steelhead populations have increased in natural origin abundance in recent years, but productivity levels remain low. Abundance for most populations declined to extremely low levels in the mid-1990s, increased to levels above or near

the recovery abundance thresholds (all populations except the Okanogan) in a few years in the early 2000s, and is now at levels intermediate to those of the mid-1990s and early 2000s. Abundance since 2001 has substantially increased for the DPS as a whole. The proportions of hatchery origin returns in natural spawning areas remain extremely high across the DPS, especially in the Methow and Okanogan River populations.

Limiting Factors and Threats

The key limiting factors and threats for UCR steelhead include hydropower projects, predation, harvest, hatchery effects, degraded tributary habitat and degraded estuary habitat. Ocean conditions generally have been poor for this DPS over the last 20 years, improving only in the last few years.

Recent Ocean and Mainstem Harvest

Few steelhead are caught in ocean fisheries. Ocean fishing mortality on UCR steelhead is assumed to be zero. Upriver summer steelhead, which include UCR steelhead, are categorized as A-run or B-run based on run timing and age and size characteristics. Upper Columbia River are all A-run fish.

Steelhead were historically taken in tribal and non-tribal gillnet fisheries, and in recreational fisheries in the mainstem Columbia River and in tributaries. In the 1970s, retention of steelhead in non-tribal commercial fisheries was prohibited, and in the mid 1980s, tributary recreational fisheries in Washington adopted mark-selective regulations. Steelhead are still harvested in tribal fisheries, in mainstem recreational fisheries, and there is incidental mortality associated with mark-selective recreational fisheries. The majority of impacts on the summer run occur in tribal gillnet and dip net fisheries targeting Chinook salmon. Because of their larger size, the B-run fish are more vulnerable to the gillnet gear. Consequently, this component of the summer run experiences higher fishing mortality than the A-run component. In recent years, total exploitation rates on the A-run have been stable at around 5 percent, while exploitation rates on the B-run have generally been in the range of 15 to 20 percent. (Ford et al. 2010)

Rangewide Status of Critical Habitat

Designated critical habitat for UCR steelhead includes all Columbia River estuarine areas and river reaches proceeding upstream to Chief Joseph Dam as well as specific stream reaches in the following subbasins: Chief Joseph, Okanogan, Similkameen, Methow, Upper Columbia/Entiat, Wenatchee, Lower Crab, and Upper Columbia/Priest Rapids (NMFS 2005d). There are 42 watersheds within the range of this DPS. Three watersheds received a low rating, 8 received a medium rating, and 31 received a high rating of conservation value to the DPS. The Columbia River rearing/migration corridor downstream of the spawning range is considered to have a high conservation value and is the only habitat area designated in 11 of the high value watersheds identified above. This corridor connects every population with the ocean and is used by rearing/migrating juveniles and migrating adults. The Columbia River estuary is a unique and essential area for juveniles and adults making the physiological transition between life in freshwater and marine habitats. Of the 1,332 miles of habitat areas eligible for designation, 1,262 miles of stream are designated critical habitat.

Middle Columbia River Steelhead

Species Overview

Background

The Middle Columbia River (MCR) Steelhead DPS includes anadromous populations in Oregon and Washington subbasins upstream of the Hood and Wind River systems to and including the Yakima River, as well seven artificial propagation programs: the Touchet River Endemic, Yakima River Kelt Reconditioning Program (in Satus Creek, Toppenish Creek, Naches River, and Upper Yakima River), Umatilla River, and the Deschutes River steelhead hatchery programs. There are four major population groups with 17 populations in this DPS. Almost all populations are summer-run fish; two winter-run populations return to the Klickitat and Fifteenmile Creek watersheds. Blockages have prevented access to sizable historical production areas in the Deschutes, White Salmon, and White Salmon rivers. On August 15, 2011, NMFS completed a five-year review for the MCR steelhead DPS and concluded that the species should remain listed as threatened (NMFS 2011).

Current Status & Recent Trends

The Mid-Columbia Steelhead DPS is not currently meeting the viability criteria (adopted from the ICTRT) in the Mid-Columbia Steelhead Recovery Plan. Recent trends in abundance are positive or stable for eleven of the populations and negative for the remainder. Natural origin spawning estimates are highly variable relative to minimum abundance thresholds across the populations in the DPS (Ford et al. 2010).

Limiting Factors and Threats

Historically, the key limiting factors for MCR steelhead include mainstem hydropower projects, tributary habitat and hydropower, water storage projects, predation, hatchery effects, harvest, and estuary conditions. Ocean conditions have been generally poor over most of the last 20 years, improving only in the last few years.

Recent Ocean and Mainstem Harvest

Few steelhead are caught in ocean fisheries. Ocean fishing mortality on MCR steelhead is assumed to be zero. The MCR steelhead DPS is made up of mostly summer run populations, although there are a few populations with winter run timing. The summer run populations are all categorized as A-run based on run timing and age and size characteristics.

Fisheries in the Columbia River are limited to assure that the incidental take of ESA-listed Middle Columbia River steelhead does not exceed specified rates. Non-Treaty fisheries were subject to a 2 percent harvest rate limit on A-run steelhead. Treaty Indian fall season fisheries were subject to a 15 percent harvest rate limit on B-run steelhead, but were not subject to a particular A-run harvest rate constraint since B-run steelhead are generally more limiting. Recent harvest rates on Middle Columbia River A-run steelhead in non-Treaty and treaty Indian fisheries ranged from 1.0 to 1.9 percent, and 4.1 to 12.4 percent, respectively.

Rangewide Status of Critical Habitat

Designated critical habitat for MCR steelhead includes all Columbia River estuarine areas and river reaches in the following subbasins: Upper Yakima, Naches, Lower Yakima, Middle Columbia/Lake Wallula, Walla Walla, Umatilla, Middle Columbia/Hood, Klickitat, Upper John

Day, North Fork John Day, Middle Fork John Day, Lower John Day, Lower Deschutes, Trout, and Upper Columbia/Priest Rapids (NMFS 2005d). There are 114 watersheds within the range of this DPS. Nine watersheds received a low rating, 24 received a medium rating, and 81 received a high rating of conservation value to the DPS. The lower Columbia River rearing/migration corridor downstream of the spawning range is considered to have a high conservation value and is the only habitat area designated in three of the high value watersheds identified above. This corridor connects every population with the ocean and is used by rearing/migrating juveniles and migrating adults. The Columbia River estuary is a unique and essential area for juveniles and adults making the physiological transition between life in freshwater and marine habitats. Of the 6,529 miles of habitat areas eligible for designation, 5,815 miles of stream are designated critical habitat.

Effects of Climate Change on all ESUs and DPSs

As reviewed in Independent Scientific Advisory Board ((ISAB) (2007)), the current status of salmon and steelhead species and their critical habitat in the Pacific Northwest has been influenced by climate change over the past 50-100 years and this change is expected to continue into the future. Average annual Northwest air temperatures have increased by approximately 1°C since 1900, which is nearly twice that for the last 100 years, indicating an increasing rate of change. The latest climate models project a warming of 0.1 to 0.6°C per decade over the next century. This change in surface temperature has already modified, and is likely to continue to modify, freshwater, estuarine, and marine habitats of salmon and steelhead, including designated critical habitat. Consequently, abundance, productivity, spatial distribution, and diversity of salmonid life stages occupying each type of affected habitat is likely to be further modified, generally in a detrimental manner. There is still a great deal of uncertainty associated with predicting specific changes in timing, location and magnitude of future climate change. It is also likely that the intensity of climate change effects on salmon, steelhead, eulachon, and green sturgeon will vary by geographic area.

Tributary Habitat

As described in ISAB (2007), effects of climate change that have influenced the habitat and species in the Northwest, and that are expected to continue to do so in the future, include: reduction of cold water habitat, variation in quality and quantity of tributary rearing habitat, alterations to migration patterns, accelerated embryo development, premature emergence of fry, and competition among species. Recent modeling results indicate that increased summer temperatures or decreased fall streamflow are likely to significantly reduce parr-smolt survival of Snake River spring/summer Chinook by 2040, and this result may also be applicable to other species with similar life history strategies in the Northwest.

Estuarine Habitat

As described in ISAB (2007), effects of climate change that have influenced the habitat and species in the Northwest, and that are expected to continue to do so in the future include: higher winter freshwater flows and higher sea level elevation may lead to increased sediment deposition and wave damage; lower freshwater flows in late spring and summer may lead to upstream extension of the salt wedge, possibly influencing the distribution of salmonid prey and predators; and increased temperature of freshwater inflows may extend the range of warm-adapted non-indigenous species that are normally found only in freshwater. In all of these cases, the specific

effects on salmon and steelhead abundance, productivity, spatial distribution and diversity are poorly understood.

Ocean Conditions

As described in ISAB (2007), effects of climate change that have influenced the biological requirements of listed species in the ocean, and that are expected to continue to do so in the future include: increased water temperature, increased stratification of the water column, and changes in intensity and timing of coastal upwelling. These continuing changes will alter primary and secondary productivity, the structure of marine communities, and in turn, the growth, productivity, survival, and migrations of salmonids. A mismatch between earlier smolt migrations (due to earlier peak spring freshwater flows and decreased incubation period) and altered upwelling may reduce marine survival rates. Increased concentration of CO₂ reduces the availability of carbonate for shell-forming invertebrates, including some that are prey items for juvenile salmonids.

2.3 Environmental Baseline

The “environmental baseline” includes the past and present impacts of all Federal, state, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early Section 7 consultation, and the impact of state or private actions which are contemporaneous with the consultation in process (50 CFR 402.02).

The action area includes a migration and rearing corridor that has been modified by The Dalles Dam. There are various downstream fish passage routes at The Dalles Dam, most of which are part of the hydroproject owned by the U.S. Government and operated by the Corps of Engineers. These routes are: turbines, spillway, sluiceways, fish ladder, navigation lock, and the PUD’s Project. As mentioned earlier, there is an ESA Biological Opinion for the Federal Columbia River Power System (FCRPS) (NMFS 2008 incorporated into the supplemental 2010 Biological Opinion (NMFS 2010)) through 2013 that covers mortality from fish passage through all routes past The Dalles Dam, including those operated by the PUD. The dam passage survival targets established by that consultation for salmon and steelhead are 96 percent for both yearling Chinook salmon and steelhead smolts, and 93 percent for sub-yearling Chinook salmon, including survival through the PUD’s bypass and sampling facility. Studies in 2010 showed that 96 percent of yearling Chinook salmon, 94 percent of sub-yearling Chinook salmon, and 95 percent of steelhead passed the dam safely (Johnson et al. 2010).

Historically, NMFS issued Section 10 permits for scientific research or enhancement for propagation and survival under the ESA after consulting with itself (NMFS 2001). Since the project was authorized by FERC in December 31, 1987, NMFS has changed its practice to consult with FERC over entire hydropower projects and then issue take authorizations in the context of these Section 7 consultations. To account for the past effects of the operation of the project, NMFS has considered its past consultation in support of its issuance of Section 10 permits as well as those past effects of the entire FERC project to be part of the environmental baseline. The project has been operated as described under the proposed action. The juvenile

monitoring program has been modified over the years to respond to areas that seemed to cause injury or mortality to the fish sampled. For example, high velocities at the dewatering plate used to impinge fry. The sampling facility was modified to eliminate this.

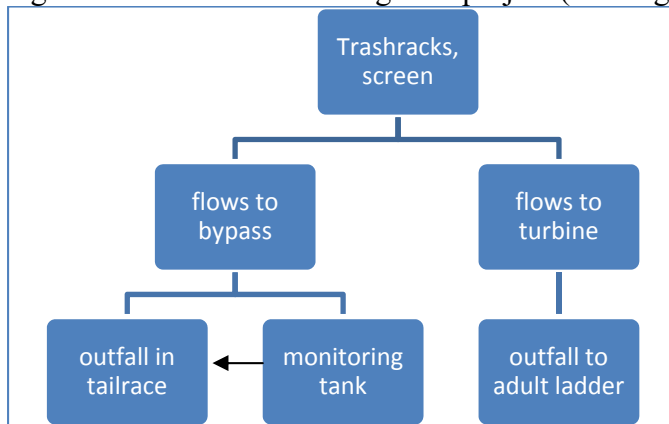
2.4 Effects of the Action on the Species and its Designated Critical Habitat

“Effects of the action” means the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action, that will be added to the environmental baseline (50 CFR 402.02). Indirect effects are those that are caused by the proposed action and are later in time, but still are reasonably certain to occur.

Following the route of water through the Project lends a way to identify all the different areas where fish could be affected. Water flows through two routes within the Project (Figure 6). It enters through the trashracks and then bifurcates into these routes. Most of the flow goes through the screen and to the turbine and then exits into the north shore adult ladder. A small amount of water (about 10 to 12 cfs) passes over the weir and into a bypass pipe, or when fish monitoring is occurring, into a monitoring tank. The outfall from the bypass pipe is into The Dalles tailrace.

The different areas that could impact fish are: the trash racks in front of the auxiliary water intake in the dam’s forebay (Figure 5), the outfall from the turbine route into the adult ladder, the route past the 105 feet long vertical screens in the dewatering structure, the monitoring tank, and the outfall from the dewatering structure and the monitoring tank into the tailrace. With the exception of the dewatering structure, each of these impact pathways is the same for each ESU or DPS. Therefore, the effects analysis below is applicable to each ESU or DPS in this opinion.

Figure 6. Water routes through the project (flowing down).



Looking at the 2010 monthly average flows passed through The Dalles Dam, 0.24 to 0.91 percent of flow past The Dalles Dam went through the PUD’s Project as compared to other routes. Given NMFS does not know the number of fish per unit flow entering the Project, we are

assuming a one to one ratio (i.e., one unit of flow equals one unit of fish³). Therefore, less than one percent of the fish that passed The Dalles Dam went through the Project.

Trash racks

The trash rack spacing (less than one inch between bars) precludes adult fish and large debris from entering the Project. The trash racks are cleaned when the elevation differential across the rack exceeds 0.5 feet.

Dewatering structure - screen and discharge

The fish monitoring performed from 1991 through 2010 indicates on average a low level of fish injury or mortality due to the screen (Table 1). The average percent injury has ranged from 0.5 to 5.2 between the different ESUs/DPSs with an overall average of 1.1 percent for all species. The average percent mortality has ranged from 1 to 6.4 between the different types of fish with an overall average of 5.8. Despite the variability of percentages within the range of years analyzed, in many years, no injury or mortalities were seen (see for example, percent years no injury in Table 1).

Table 1. Yearly average rates of injury and mortality and percent of years with no injury or mortality seen for juvenile salmonids passing through the PUD's Project at The Dalles Dam, 1991 through 2010 (Martinson 2011b).⁴

| Type of Fish | Avg. Number Sampled | Avg. Percent Injury⁵ (percent years with no injury) | Avg. Percent Mortality (percent years with no mortality) |
|---------------------|----------------------------|---|---|
| yearling Chinook | 131 | 2.7 (42%) | 4.2 (42%) |
| subyearling Chinook | 1,014 ⁶ | 0.5 (58%) | 6.4 (0%) |
| Coho | 27 | 1.2 (84%) | 1 (79%) |
| Steelhead | 52 | 4.4 (47%) | 1.6 (68%) |
| Sockeye | 24 | 5.2 (58%) | 3.6 (58%) |
| Total | Total of Avg. 1248 | Avg. 1.1 | Avg. 5.8 |

Subyearling Chinook have the highest average percent mortality. Although the cause of fry mortality is difficult to identify with certainty, the research biologist working at this project believes this is more of a problem with the sample collection system than the dewatering structure (screen) (Martinson 2011b). The sample collection system was hampered in the past by a manual dewatering chute that could dry up if forebay elevation dropped too low. This flume was eliminated and replaced with a larger collection tank that allowed the discharge to plunge directly into the monitoring tank. A large amount of turbulence was created by the plunging discharge. Although the turbulence has been reduced by reducing the volume of water being discharged into the monitoring tank, the problem has not been completely resolved and is exacerbated when debris is present. Since fry-sized juvenile Chinook are not strong swimmers,

³ This is probably over estimating the number of fish through the Project since it is likely more fish are attracted to the higher flows of The Dalles Dam spillway.

⁴ These percentages are of the fish that go through the Project, less than one percent of the total number of fish passing The Dalles Dam.

⁵ Injury is determined by descaling.

⁶ Of this, 70.5 percent were fry.

if they get caught up in debris or impinged on the screen, it can be lethal. This effect also carries over to other types of fish, but to a lesser degree. The PUD is pursuing a sample collection system that would be built downstream of the plunge pool so that the fluctuating forebay and turbulence in the collection tank would not create problems for juvenile fish.

Monitoring Tank

Fish handling effects

Capturing and handling fish causes them stress, which can lead to loss of condition (and reproductive fitness) and even injury or mortality. In general, the primary contributing factors to stress, injury, and mortality from handling are excessive doses of anesthetic, differences in water temperature between the river and tank where the fish are held, dissolved oxygen conditions, the amount of time that fish are held out of the water, and physical trauma. Stress on salmonids from handling increases rapidly if the water temperature exceeds 18 °C (64.4 °F) or dissolved oxygen in the tank is below saturation. Fish that are transferred to holding tanks can experience trauma if care is not taken in the transfer process, and fish can experience stress and injury from overcrowding in traps that are not emptied on a regular basis. Debris buildup at traps can also kill or injure fish if the traps are not monitored and cleared on a regular basis.

The PUD closely monitors the doses of anesthetic used in its sampling program and anesthetized fish are allowed to recover before being released. Water temperatures in the monitoring facility are maintained at those in the river by constant mixing of water during collection and shading from the walls and timing of the sample workup which is usually in early morning. When sampling, the fish are held for a maximum of 24 hours. Debris in the trap is monitored and cleaned one or two times during the 24-hour collection period, depending on load.

Based on the PUD's prior experience with the techniques and protocols that would be used to conduct the proposed monitoring, no more than 5 percent of the juvenile salmonids and no more than 25 percent of fry encountered are likely to be killed as a result of being captured and handled. In most cases, mitigation measures will be employed, thereby keeping adverse effects to a minimum.

Water quality impacts

The Project uses about 50 grams of Finquel (also known as MS-222) per season (Martinson 2011 a). It is diluted in a stock solution and then further diluted when added to the water in the sample holding tank. Once sampling is complete, it is drained to the river via the bypass pipe. On a weekly basis, that amounts to about 2 grams diluted into roughly 200,000 cubic feet per second of river flow, varying from year to year. Because the dilution factor is substantial, the dose of Finquel used in the PUD's sampling tank is not likely to affect any fish in the tailrace or entrance of the north shore ladder.

Outfall into the Adult Ladder

This action provides a positive effect to fish. This auxiliary water combines with water in the fish ladder resulting in a total flow that benefits adult fish passage at The Dalles Dam. The ladder will remain watered up regardless of Project operations.

Bypass Pipe

An evaluation of the bypass was conducted in 1994 by releasing groups of yearling spring Chinook into the bypass pipe and collecting them at the outfall (Johnsen 1995). There were no mortalities. Although there was some descaling, the amount was not a significantly different from the control fish. In other facilities, subyearlings often fare better through bypass systems than yearlings. Because they are less smolted, they are not as fragile and are less likely to be descaled.

Outfall in Tailrace

The 10 to 12 cfs of water released into The Dalles tailrace would be a small percentage of total flow. If it had any effect to adults, it would be beneficial by adding slightly more attraction flow to the adult ladder entrance. Juvenile fish discharged to the tailrace may be susceptible to predation since this is a fixed location and predators may stage there. Because this flow is caught up in the spill flow during the fish passage season and because the spill pattern is designed to minimize predation, it is unlikely that there is much predation on these bypassed fish.

If water to this route is stopped, then the bypass pipe drains out taking the fish with the flow. Recent video camera evaluation of the pipe showed that it was smooth and consistent in slope. There is also a valve that could be operated, if necessary, to add water to the bypass pipe.

Turbine Shutdown

In the event the turbine is shut down, the sluice gates open to allow for emergency auxiliary water supply to the ladder (Figure 5). Juvenile fish would either go through this route and into the ladder or hold in the dewatering structure that, while not operating to dewatering, is still watered.

Amount of Take

Take is identified below.

The estimated number of fish passing through the Project (Table 3) during the fish passage season is a small proportion of the total fish passing The Dalles Dam (Table 4). The estimated number of fish passing through the Project was derived by multiplying the estimated number of fish passing through the Project during sampling (Table 2) by 7 (representing 7 days of the week). The proportion of fish passing The Dalles Dam which pass through the Project (Table 5) was estimated by comparing the estimated number of total fish passing through the Project (Table 3) to the estimated total fish (listed and unlisted) passing The Dalles Dam (Table 4).

Table 6 presents the estimated percentage of fish mortality of total fish passing The Dalles Dam resulting from the Project. Table 7 presents the estimated percentage of fish injury of total fish passing The Dalles Dam resulting from the Project. These values give perspective to the impact to the individual species. The percentages are so far out into the decimal points that it is fair to conclude that the Project will not have result in detrimental overall impacts to the species.

Table 8 presents the estimated number of fish passing the Project that are mortalities. Table 9 presents the estimated number of fish passing the Project that are injuries.

Table 2. Estimated number of fish passing through the Project during sampling (source: Martinson 2010)

| | | One single 24 hour sampling period per week | | | | |
|------------|--|---|---------------------|-----------|------|---------|
| | | total seasonal sampling catch | | | | |
| | | Yearling Chinook | Subyearling Chinook | Steelhead | coho | Sockeye |
| | | | | | | |
| 2005 | | 60 | 1600 | 1 | 27 | 0 |
| 2006 | | 44 | 101 | 13 | 9 | 2 |
| 2007 | | 0 | 0 | 0 | 0 | 0 |
| 2008 | | 2 | 45 | 4 | 4 | 0 |
| 2009 | | 0 | 42 | 0 | 0 | 0 |
| 2010 | | 78 | 346 | 9 | 5 | 26 |
| 6 year avg | | 30.7 | 355.7 | 4.5 | 7.5 | 4.7 |

Table 3. Estimated number of total fish passing through the Project (7 x total season catch from Table 2).

| | Season total passage Estimate | | | | |
|------------|-------------------------------|------------------------|-----------|------|---------|
| | Yearling Chinook | Subyearling Chinook | Steelhead | coho | Sockeye |
| | | | | | |
| 2005 | 420 | 11200 | 7 | 189 | 0 |
| 2006 | 308 | 707 | 91 | 63 | 14 |
| 2007 | 0 | 0 | 0 | 0 | 0 |
| 2008 | 14 | 315 | 28 | 28 | 0 |
| 2009 | 0 | 294 | 0 | 0 | 0 |
| 2010 | 546 | 2422 | 63 | 35 | 182 |
| 6 year avg | 214.7 | 2489.7 | 31.5 | 52.5 | 32.7 |

Table 4. Estimation of total fish (listed and unlisted) passing The Dalles Dam (Ferguson 2005, 2006, 2007, 2009a, 2009b, 2010).

| | Yearling Chinook | subyearling Chinook | Coho | Steelhead | Sockeye | total salmonids |
|----------------|------------------|---------------------|-----------|-----------|----------|-----------------|
| 2005 | 2904211 | 1782543 | 1310680 | 1873470 | 530782 | 8401686 |
| 2006 | 4204443 | 1430078 | 1184329 | 1469992 | 593699 | 8882541 |
| 2007 | 3,869,496 | 3,651,619 | 1,070,256 | 1,502,451 | 655501 | 10749323 |
| 2008 | 3475697 | 1732588 | 1156638 | 1380818 | 640083 | 8385824 |
| 2009 | 2635142 | 3194457 | 1153648 | 1293025 | 622455 | 8898727 |
| 2010 | 3354011 | 3298219 | 995937 | 1693280 | 596302 | 9937749 |
| 6 Year average | 3407166.7 | 2514917.3 | 1145248.0 | 1535506.0 | 606470.3 | 9209308.33 |

Table 5. Estimation of proportion of total fish passing The Dalles Dam which pass through the Project (Table 3 compared to Table 4

| | Yearling Chinook | subyearling Chinook | Coho | Steelhead | Sockeye |
|----------------|------------------|---------------------|----------|-----------|----------|
| 2005 | 0.01446% | 0.62832% | 0.00053% | 0.01009% | 0.00000% |
| 2006 | 0.00733% | 0.04944% | 0.00768% | 0.00429% | 0.00236% |
| 2007 | 0.00000% | 0.00000% | 0.00000% | 0.00000% | 0.00000% |
| 2008 | 0.00040% | 0.01818% | 0.00242% | 0.00203% | 0.00000% |
| 2009 | 0.00000% | 0.00920% | 0.00000% | 0.00000% | 0.00000% |
| 2010 | 0.01628% | 0.07343% | 0.00633% | 0.00207% | 0.03052% |
| 6 Year average | 0.00630% | 0.09900% | 0.00275% | 0.00342% | 0.00539% |

Table 6. Estimated percent mortality of total fish passing The Dalles Dam resulting from the Project (Table 1 values multiplied to Table 5 values).

| | Yearling Chinook | subyearling Chinook | Coho | Steelhead | Sockeye |
|----------------|------------------|---------------------|----------|-----------|----------|
| 2005 | 0.00061% | 0.04021% | 0.00001% | 0.00016% | 0.00000% |
| 2006 | 0.00031% | 0.00316% | 0.00008% | 0.00007% | 0.00008% |
| 2007 | 0.00000% | 0.00000% | 0.00000% | 0.00000% | 0.00000% |
| 2008 | 0.00002% | 0.00116% | 0.00002% | 0.00003% | 0.00000% |
| 2009 | 0.00000% | 0.00059% | 0.00000% | 0.00000% | 0.00000% |
| 2010 | 0.00068% | 0.00470% | 0.00006% | 0.00003% | 0.00110% |
| 6 Year average | 0.00027% | 0.00830% | 0.00003% | 0.00005% | 0.00020% |

Table 7. Estimated percent injury of total fish passing The Dalles Dam resulting from the Project (Table 1 values multiplied to Table 5 values).

| | Yearling Chinook | subyearling Chinook | Coho | Steelhead | Sockeye |
|----------------|------------------|---------------------|----------|-----------|----------|
| 2005 | 0.00039% | 0.00314% | 0.00001% | 0.00044% | 0.00000% |
| 2006 | 0.00020% | 0.00025% | 0.00009% | 0.00019% | 0.00012% |
| 2007 | 0.00000% | 0.00000% | 0.00000% | 0.00000% | 0.00000% |
| 2008 | 0.00001% | 0.00009% | 0.00003% | 0.00009% | 0.00000% |
| 2009 | 0.00000% | 0.00005% | 0.00000% | 0.00000% | 0.00000% |
| 2010 | 0.00044% | 0.00037% | 0.00008% | 0.00009% | 0.00159% |
| 6 Year average | 0.00017% | 0.00065% | 0.00003% | 0.00014% | 0.00028% |

Table 8. Estimated number of fish passing the Project that are mortalities (Table 1 mortality values multiplied by Table 3 values).

| | Yearling Chinook | subyearling Chinook | Coho | Steelhead | Sockeye |
|----------------|------------------|---------------------|------|-----------|---------|
| 2005 | 17.64 | 716.80 | 0.07 | 3.02 | 0.00 |
| 2006 | 12.94 | 45.25 | 0.91 | 1.01 | 0.50 |
| 2007 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2008 | 0.59 | 20.16 | 0.28 | 0.45 | 0.00 |
| 2009 | 0.00 | 18.82 | 0.00 | 0.00 | 0.00 |
| 2010 | 22.93 | 155.01 | 0.63 | 0.56 | 6.55 |
| 6 Year average | 9.02 | 159.34 | 0.32 | 0.84 | 1.18 |

Table 9. Estimated number of fish passing through the Project that are injured (Table 1 injury values multiplied by Table 3 values).

| | Yearling Chinook | subyearling Chinook | Coho | Steelhead | Sockeye |
|----------------|------------------|---------------------|------|-----------|---------|
| 2005 | 11.34 | 56.00 | 0.08 | 8.32 | 0.00 |
| 2006 | 8.32 | 3.54 | 1.09 | 2.77 | 0.73 |
| 2007 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2008 | 0.38 | 1.58 | 0.34 | 1.23 | 0.00 |
| 2009 | 0.00 | 1.47 | 0.00 | 0.00 | 0.00 |
| 2010 | 14.74 | 12.11 | 0.76 | 1.54 | 9.46 |
| 6 Year average | 5.80 | 12.45 | 0.38 | 2.31 | 1.70 |

Table 10 provides the maximum number of injury and mortality observed in years 2005 through 2010. The impacts of these maximum values were evaluated by looking at the percent of the species that this represented (Table 11).

Table 10. The maximum number of injury and mortality observed in prior years (2005-2010).

| | Yearling Chinook | Subyearling Chinook | Coho | Steelhead | Sockeye |
|-----------|------------------|---------------------|------|-----------|---------|
| mortality | 22.93 | 716.80 | 0.91 | 3.02 | 6.55 |
| Injury | 14.74 | 56.00 | 1.09 | 8.32 | 9.46 |
| Total | 38 | 773 | 2 | 11 | 16 |

Table 11. The number of fish from each listed species that are mortalities or injuries when the totals from Table 10 are used.

| ESU totals | Number of mortalities and injuries | Proportion of observed mortalities and injuries | percent of ESU run at The Dalles |
|---------------------------|------------------------------------|---|----------------------------------|
| yearling Chinook | | | |
| Snake River Spring/Summer | 5.01 | 0.13 | 1.22E-05 |
| Snake River Fall | 6.53 | 0.17 | 1.06E-05 |
| Upper Columbia River | 3.78 | 0.10 | 1.07E-05 |
| Subyearling Chinook | | | |
| Snake River Fall | 47.39 | 0.06 | 0.0003 |
| Steelhead | | | |
| Snake River Steelhead | 1.26 | 0.11 | 7.16E-08 |
| Upper Columbia River | 2.44 | 0.22 | 7.16E-08 |
| Middle Columbia River | 4.29 | 0.39 | 7.16E-08 |
| Sockeye | | | |
| Snake River Sockeye | 0.11 | 0.0071 | 2.64E-06 |

Given that the small level of mortalities and injured fish numbers have a minuscule effect to the species and that the actual numbers vary from year to year, NMFS is increasing the allowed take above what is shown in Table 11. These increased levels protect the species and allow for variations over the years. These values (Table 12) have been derived by considering the past 10(a)(1)(A) permitted numbers and the historic records of what numbers were seen at the project. The impacts to the species were evaluated by looking at the percent of each species that these numbers represent. These take levels will not jeopardize any of the species and will not hinder recovery.

Table 12. Take per year per species.

| ESU | Life Stage | Origin | Type of Take | Total Take Authorized by ESU or DPS per Year |
|-------------------------------------|------------|---|--|--|
| Snake River fall Chinook | Juvenile | Naturally Produced, Artificially Propagated | Capture, Handling, Release, Indirect Mortality | 53 |
| Snake River spring/summer Chinook | Juvenile | Naturally Produced, Artificially Propagated | Capture, Handling, Release, Indirect Mortality | 8 |
| Upper Columbia River spring Chinook | Juvenile | Naturally Produced, Artificially Propagated | Capture, Handling, Release, Indirect Mortality | 7 |
| Snake River sockeye | Juvenile | Naturally Produced, Artificially Propagated | Capture, Handling, Release, Indirect Mortality | 1 |
| Snake River steelhead | Juvenile | Naturally Produced, Artificially Propagated | Capture, Handling, Release, Indirect Mortality | 3 |
| Upper Columbia River steelhead | Juvenile | Naturally Produced, Artificially Propagated | Capture, Handling, Release, Indirect Mortality | 26 |
| Middle Columbia River steelhead | Juvenile | Naturally Produced, Artificially Propagated | Capture, Handling, Release, Indirect Mortality | 7 |

Table 13. Proportion of total population with allowed take numbers in Table 12.

| ESU totals | Number of mortalities and injuries | percent of ESU run at The Dalles |
|---------------------------|------------------------------------|----------------------------------|
| yearling Chinook | | |
| Snake River Spring/Summer | 8 | 1.94E-05 |
| Snake River Fall | 53 | 8.63E-05 |
| Upper Columbia River | 7 | 1.98E-05 |
| Subyearling Chinook | | |
| Snake River Fall | 53 | 0.00034 |
| Steelhead | | |
| Snake River Steelhead | 3 | 1.71E-07 |
| Upper Columbia River | 26 | 7.64E-07 |
| Middle Columbia River | 7 | 1.17E-07 |
| Sockeye | | |
| Snake River Sockeye | 1 | 0.00023 |

The level of take is less than one percent of the average total runs from 2006 through 2010.

Effects to Critical Habitat

Effects to critical habitat are negligible. The action area is small and adaptive management of the facility based on results of monitoring ensures acceptable passage conditions for juvenile fish. The MS-222 released into the tailrace is diluted to such a degree that adequate water quality for juvenile and adult salmonids is maintained. The release of project waters into The Dalles tailrace and the north shore ladder improves passage conditions for adult fish using the ladder.

2.5 Cumulative Effects

“Cumulative effects” are those effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation (50 CFR 402.02). Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to Section 7 of the Act.

Cumulative effects have not been identified in the action area for this consultation, which is a small portion of The Dalles Dam and tailrace.

2.6 Integration and Synthesis

The Integration and Synthesis section is the final step of NMFS’ assessment of the risk posed to species and critical habitat as a result of implementing the proposed action. In this section, we add the effects of the action (Section 2.4) to the environmental baseline (Section 2.3) and the cumulative effects (Section 2.5) to formulate the agency’s biological opinion as to whether the

proposed action is likely to: (1) result in appreciable reductions in the likelihood of both survival and recovery of the species in the wild by reducing its numbers, reproduction, or distribution; or (2) reduce the value of designated or proposed critical habitat for the conservation of the species. These assessments are made in full consideration of the status of the species and critical habitat (Section 2.2).

The rangewide status of the species affected by the proposed action is generally poor (moderate to high risk of extinction). Passage conditions under the environmental baseline, including the PUD's Project are close to the FCRPS survival targets for The Dalles Dam and a very small number of juveniles of each species are negatively affected by the PUD's Project (stress, injury, or mortality). The continued operation of the Project and its monitoring program do not impact recovery in any significant way. Any negative effects on PCEs within the action area are very small and would not affect the conservation value of designated critical habitat. NMFS did not identify any cumulative effects.

2.7 Conclusion

After reviewing the current status of the listed species, the environmental baseline within the action area, the effects of the proposed action, and cumulative effects, it is NMFS' biological opinion that the proposed action is not likely to jeopardize the continued existence of the Snake River fall Chinook salmon ESU, Snake River spring/summer Chinook salmon ESU, Upper Columbia River spring Chinook salmon ESU, Snake River sockeye salmon ESU, Snake River steelhead DPS, Upper Columbia River steelhead DPS, or Middle Columbia River steelhead DPS, or to destroy or adversely modify their designated critical habitat.

2.8. Incidental Take Statement

Section 9 of the ESA and Federal regulation pursuant to Section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without a special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by regulation to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. For purposes of this consultation, we interpret "harass" to mean an intentional or negligent action that has the potential to injure an animal or disrupt its normal behaviors to a point where such behaviors are abandoned or significantly altered.⁷ Section 7(b)(4) and Section 7(o)(2) provide that taking that is incidental to an otherwise lawful agency action is not considered to be prohibited taking under the ESA, if that action is performed in compliance with the terms and conditions of this incidental take statement.

2.8.1 Amount or Extent of Take

The amount of take is identified in section 2.4 Effects of the Action on the Species and its

⁷ NMFS has not adopted a regulatory definition of harassment under the ESA. The World English Dictionary defines harass as "to trouble, torment, or confuse by continual persistent attacks, questions, etc." The U.S. Fish and Wildlife Service defines "harass" in its regulations as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering (50 CFR 17.3). The interpretation we adopt in this consultation is consistent with our understanding of the dictionary definition of harass and is consistent with the U.S. Fish and Wildlife interpretation of the term.

Designated Critical Habitat under the Amount of Take Table 12 in this biological opinion which is repeated here.

Table 12. Take per year per species

| ESU | Life Stage | Origin | Type of Take | Total Take Authorized by ESU or DPS per Year |
|-------------------------------------|------------|---|--|--|
| Snake River fall Chinook | Juvenile | Naturally Produced, Artificially Propagated | Capture, Handling, Release, Indirect Mortality | 53 |
| Snake River spring/summer Chinook | Juvenile | Naturally Produced, Artificially Propagated | Capture, Handling, Release, Indirect Mortality | 8 |
| Upper Columbia River spring Chinook | Juvenile | Naturally Produced, Artificially Propagated | Capture, Handling, Release, Indirect Mortality | 7 |
| Snake River sockeye | Juvenile | Naturally Produced, Artificially Propagated | Capture, Handling, Release, Indirect Mortality | 1 |
| Snake River steelhead | Juvenile | Naturally Produced, Artificially Propagated | Capture, Handling, Release, Indirect Mortality | 3 |
| Upper Columbia River steelhead | Juvenile | Naturally Produced, Artificially Propagated | Capture, Handling, Release, Indirect Mortality | 26 |
| Middle Columbia River steelhead | Juvenile | Naturally Produced, Artificially Propagated | Capture, Handling, Release, Indirect Mortality | 7 |

2.8.2 Effect of the Take

The level of take is less than one percent of the average total runs from 2006 through 2010.

2.8.3 Reasonable and Prudent Measures and Terms and Conditions

“Reasonable and prudent measures” are nondiscretionary measures to minimize the amount or extent of incidental take (50 CFR 402.02). “Terms and conditions” implement the reasonable and prudent measures (RPM) (50 CFR 402.14). These must be carried out for the exemption in section 7(o)(2) to apply.

Reasonable and prudent measure:

1. Conduct ongoing monitoring and reporting program required by the FERC license.
2. Northern Wasco PUD may apply for improvements to minimize impacts from monitoring to FERC in consultation with NMFS.

Terms and Conditions to implement reasonable and prudent measure 1:

- a) Northern Wasco PUD will provide an annual report of the previous year’s research related to anadromous fish, and other relevant data to NMFS no later than January 31 of each year. This report will also include study plans for research and monitoring to be conducted during the next year. NMFS will review these plans, and approve, approve with changes, or disapprove the study plans within three months after submission.
- b) Northern Wasco PUD must make reasonable modifications to the plans to meet NMFS’ approval.
- c) Research and monitoring activities conducted in relation to the Opinion will meet the following standards:
 - i. All Research, Monitoring and Evaluation (RM&E) plans associated with anadromous fish must be approved by NMFS, with subsequent approval by FERC.
 - ii. The researcher must ensure that listed species are taken only at the levels, by the means, in the areas, and for the purposes stated in the plans developed, and according to the conditions in this permit.
 - iii. The researcher must not intentionally kill or cause to be killed any listed species unless the plan specifically allows intentional lethal take.
 - iv. The researcher must handle listed fish with extreme care and keep them in cold water to the maximum extent possible during sampling and processing procedures. When fish are transferred or held, a healthy environment must be provided; e.g., the holding units must contain adequate amounts of well-circulated water. When using gear that captures a mix of species, the researcher must process listed fish first to minimize handling stress.
 - v. The researcher must stop handling listed juvenile fish if the water temperature exceeds 70 degrees Fahrenheit at the capture site. Under these conditions, listed fish may only be visually identified and counted.
 - vi. If the researcher anesthetizes listed fish to avoid injuring or killing them during handling, the fish must be allowed to recover before being released. Fish that are only counted must remain in water and not be anesthetized.
 - vii. The researcher must use a sterilized needle for each individual injection when passive integrated transponder tags (PIT-tags) are inserted into listed fish.

- viii. If the researcher unintentionally captures any listed adult fish while sampling for juveniles, the adult fish must be released without further handling and such take must be reported.
- ix. The researcher must obtain approval from NMFS before changing sampling locations or research protocols.
- x. The researcher must notify NMFS as soon as possible but no later than two days after any authorized level of take is exceeded or if such an event is likely. The researcher must submit a written report detailing why the authorized take level was exceeded or is likely to be exceeded.
- xi. The researcher is responsible for any biological samples collected from listed species as long as they are used for research purposes. The permit holder may not transfer biological samples to anyone not listed in the approved plan without prior written approval from NMFS.
- xii. The person(s) actually doing the research must have a copy of this ITS and the applicable plan on site while conducting the authorized activities.
- xiii. The researcher must allow any NMFS employee or representative to accompany field personnel while they conduct the research activities.
- xiv. The researcher must allow any NMFS employee or representative to inspect any records or facilities related to the permit activities.
- xv. The researcher must obtain all other Federal, state, and local permits/authorizations needed for the research activities.
- xvi. On or before January 31st of every year, the researcher must submit to NMFS a post-season report that contains the information in Attachment 1 describing the research activities, the number of listed fish taken and the location, the type of take, the number of fish intentionally killed and unintentionally killed, the take dates, and a brief summary of the research results. Falsifying annual reports or permit records is a violation of this ITS.
- xvii. If the researcher violates any terms and condition they will be subject to any and all penalties provided by the ESA. NMFS may revoke this ITS if the authorized activities are not conducted in compliance with the permit and the requirements of the ESA or if NMFS determines that its ESA findings are no longer valid.
- xviii. Dead listed fish and tissue samples will be returned to the capture site, archived in a scientific collection or destroyed. A record will be kept at the Northern Wasco Project of any archived specimens including number, species, and location of the archive.

Terms and Conditions to implement reasonable and prudent measure 2:

Northern Wasco PUD may continue to make improvements to their facility, including the collection system, when fish passage issues are identified. Northern Wasco PUD will submit to NMFS the proposed plan for improvements. NMFS will review these plans, and approve, approve with changes, or disapprove the plans within three months after submission.

2.9. Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Specifically, conservation recommendations are suggestions regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information (50 CFR 402.02).

NMFS has not identified any conservation recommendations at this time.

2.10 Reinitiation of Consultation

As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded, (2) new information reveals effects of the agency action on listed species or designated critical habitat in a manner or to an extent not considered in this opinion, (3) the agency action is subsequently modified in a manner that causes an effect on the listed species or critical habitat not considered in this opinion, or 4) a new species is listed or critical habitat designated that may be affected by the action.

2.11 “Not Likely to Adversely Affect” Determinations

In this section, NMFS presents its analysis of effects of the proposed action on Southern Resident killer whale (Southern Residents).

In completing the consultation on the Northern Wasco County PUD's North Shore Hydroelectric Project (FERC No. P-7076, NMFS tracking #2008/01301), NMFS considered potential effects on ESA-listed Southern Resident Killer Whales and determined that the proposed action may affect, but is not likely to adversely affect the species. In previous consultations such as the Federal Columbia River Hydropower System biological opinion (2008), NMFS has determined that the effects of inland hydropower operations on Southern Residents is typically limited to reduction of the prey base, with special emphasis on effects to Chinook salmon, the preferred prey of Southern Residents. Unless a project has a significant effect on the prey base, there are not likely to be adverse effects on Southern Residents.

In the present case, the project would have essentially no effect on the Southern Residents prey base. The baseline for this consultation included past operation of the project, and the continued operation would extend the project and its effects into the future unchanged. While the baseline does not include continued operation of the project, and status quo operations can have effects beyond those considered in the baseline, for Southern Residents the only notable effect would be a reduction in the size of the prey base, which is not predicted to occur as a result of this action. Moreover, the FCRPS biological opinion, also in the baseline for this project, accounted for mortality at The Dalles Dam. The proposed action would not change the mortality levels considered in that opinion.

3. MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT ESSENTIAL FISH HABITAT CONSULTATION

The consultation requirement of Section 305(b) of the MSA directs Federal agencies to consult with NMFS on all actions or proposed actions that may adversely affect EFH. The MSA (Section 3) defines EFH as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” Adverse effects include the direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality or quantity of EFH. Adverse effects on EFH may result from actions occurring within EFH or outside EFH, and may include site-specific or EFH-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810). Section 305(b) also requires NMFS to recommend measures that can be taken by the action agency to conserve EFH.

This analysis is based, in part, on the EFH assessment provided by FERC and descriptions of EFH for Pacific coast salmon (PFMC 1999) contained in the fishery management plans developed by the Pacific Fishery Management Council (PFMC) and approved by the Secretary of Commerce.

3.1 Essential Fish Habitat Affected by the Project

Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other water bodies currently or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC 1999) and longstanding, naturally impassable barriers (i.e., natural waterfalls in existence for several hundred years). This includes the mainstem Columbia River, which juvenile and adult Chinook and coho salmon use as a migration and rearing corridor. The proposed action and the action area for this consultation, described in the introduction to this document, are within the area designated as essential fish habitat.

3.2 Adverse Effects on Essential Fish Habitat

Based on information provided in the BA and the analysis of effects in the opinion and the nature of the action area⁸, NMFS concludes that proposed action will not have adverse effects on EFH designated for Chinook salmon and coho salmon.

3.3 Essential Fish Habitat Conservation Recommendations

There are no EFH recommendations.

3.4 Statutory Response Requirement

A response is not required as there are no EFH recommendations.

⁸ The action area for the proposed action is within the confines of The Dalles Dam and tailrace. The Project will not affect conditions above the upstream face of The Dalles Dam or below in the tailrace.

3.5 Supplemental Consultation

The (Federal action agency) must reinitiate EFH consultation with NMFS if the proposed action is substantially revised in a way that may adversely affect EFH, or if new information becomes available that affects the basis for NMFS' EFH conservation recommendations [50 CFR 600.920(l)].

4. DATA QUALITY ACT DOCUMENTATION AND PRE-DISSEMINATION REVIEW

Section 515 of the Treasury and General Government Appropriations Act of 2001 (Public Law 106-554) (Data Quality Act) specifies three components contributing to the quality of a document. They are utility, integrity, and objectivity. This section of the Biological Opinion addresses these Data Quality Act (DQA) components, documents compliance with the DQA, and certifies that this Opinion has undergone pre-dissemination review.

4.1 Utility

Utility principally refers to ensuring that the information contained in this consultation is helpful, serviceable, and beneficial to the intended users.

This ESA consultation concludes that the proposed operation of the Northern Wasco County PUD's North Shore Hydroelectric Project will not jeopardize the affected listed species or adversely modify designated critical habitat. Therefore, FERC can authorize this action in accordance with its authority under the Federal Power Act. The intended users are the FERC and the applicant, Northern Wasco County PUD.

Individual copies were provided to the above-listed users. This consultation will be posted on the NMFS Northwest Region Web site (<http://www.nwr.noaa.gov>). The format and naming adheres to conventional standards for style.

4.2 Integrity

This consultation was completed on a computer system managed by NMFS in accordance with relevant information technology security policies and standards set out in Appendix III, 'Security of Automated Information Resources,' Office of Management and Budget Circular A-130; the Computer Security Act; and the Government Information Security Reform Act.

4.3 Objectivity

Information Product Category: Natural Resource Plan.

Standards: This consultation and supporting documents are clear, concise, complete, and unbiased; and were developed using commonly accepted scientific research methods and analyses. They adhere to published standards including the FWS and NMFS ESA Consultation Handbook, ESA Regulations, 50 CFR 402.01, *et seq.*, and the MSA EFH regulations, 50 CFR 600.920(j).

Best Available Information: This consultation and supporting documents use the best available information, as referenced in the Literature Cited section. The analyses in this Opinion/EFH consultation contain more background on information sources and quality.

Referencing: All supporting materials, information, data and analyses are properly referenced, consistent with standard scientific referencing style.

Review Process: This consultation was drafted by NMFS staff with training in ESA and MSA implementation, and reviewed in accordance with Northwest Region ESA quality control and assurance processes.

5. REFERENCES

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ATTACHMENT 1

**Post-Season Monitoring and Evaluation Form
Scientific Research Permit
Annual Report**

Date: _____

Permit No.: _____

Evaluator's Name: _____

Contact Name: _____

Contact Email: _____ **Contact Phone:** _____

(Contact = person submitting report)

Study Number and Title (if applicable): _____

Provide separate tables for each study.

Part I: This is an example of how to fill out the table.

Replace all red text with the information in the plan. Replace all blue text with the actual results of your activities.

| ESU/Species and population group if specified in your permit | Life Stage | Origin | Take Activity | Number of Fish Authorized for Take | Actual Number of Listed Fish Taken | Authorized Unintentional Mortality | Actual Unintentional Mortality | Evaluation Location | Evaluation Period |
|---|-----------------------|----------------------------|--------------------------|---|---|---|---|--------------------------------|------------------------------|
| Lower Columbia River (LCR) Chinook | Juvenile | Naturally Produced | Capture, mark, release | 100 | 90 | 5/100 | 4/90 | Columbia River, Oregon | January – February |
| LCR Chinook | Adult | Artificially Propagated | Capture, handle, release | 10 | 9 | 1/10 | 0/9 | Bonneville Dam | June |
| LCR Chinook | Adult | Naturally Produced | Intentional mortality | 20 | 15 | N/A | N/A | Bonneville Dam | June |
| Oregon Coast Coho | Juvenile | Naturally Produced | Observe / Harass | 500 | 400 | N/A | N/ A | Nehalem River | October |

Part I:

[illegible]

A.3 Environmental Assessment

ENVIRONMENTAL ASSESSMENT

DIVISION OF ENVIRONMENTAL ANALYSIS, OFFICE OF HYDROPOWER LICENSING FEDERAL ENERGY REGULATORY COMMISSION

Dalles Dam North Fishway Hydroelectric Project
FERC No. 7076-002--Washington

November 16, 1987

I. APPLICATION

On April 26, 1985, the Northern Wasco County People's Utility District (applicant) filed an application for major license, less than 5 megawatts (MW), for the Dalles Dam North Fishway Hydroelectric Project. The application was supplemented on November 12, 1985, March 19, 1986, and April 16, 1987.

The proposed project would be built at the north end of the existing Dalles dam, operated by the Department of the Army, Portland District Corps of Engineers (Corps). The dam is located on the Columbia river, near the town of the Dalles, Oregon (figure 1). The proposed project would be located on the auxiliary water supply system (AWSS) for the north fishway at the dam. The Dalles dam, an 8,700-foot-long structure, was completed in 1960 and impounds Lake Celilo, which has a surface area of 9,400 acres. The Corps operates the dam for flood control, navigation, power production, and fish passage. The proposed project would affect federal property administered by the Corps.

II. RESOURCE DEVELOPMENT

A. Purpose

The project would provide an estimated average of 25,250,000 kilowatthours (kWh) of electrical energy per year to the applicant.

B. Need for Power

According to the 1986-1987 Edition of the Electrical World Directory of Electric Utilities, the applicant's distribution system currently serves approximately 8,500 metered customers. At present, the applicant owns no generating capacity, and purchases power requirements from the Bonneville Power Administration (BPA) under a 10-year Requirements Customer Contract. In 1985, the

applicant purchased 204,005,568 kWh of electric energy from BPA. Ninety-six percent of this energy was resold to the applicant's metered customers. The applicant's summer peak demand in 1985 was 44.2 MW and the winter peak demand, for the same year, was 55.2 MW.

Under the Pacific Northwest Electric Power Planning and Conservation Act (PNEPPCA), BPA is required to meet the net firm power requirements of each requesting Pacific Northwest utility. Under the PNEPPCA, BPA is constrained from owning or constructing generating resources, but is required to purchase, on a long-term basis, the power-producing capabilities of resources sponsored by other entities, to the extent that such resources are required for BPA to meet its responsibilities. The PNEPPCA provides authority for BPA to restrict its power sales obligations, if it is unable to acquire sufficient resources to meet its responsibility. The BPA, aware of this escape provision in the PNEPPCA and aware of the unavoidable uncertainties in load forecasting as well as uncertainties in its ability to contract additional resources, has forewarned customers that, if available resources are not sufficient to meet contract obligations, BPA will implement contract curtailments, unless Requirements Customers are able to provide sufficient generating resources to cover the customers' load growth.

The number and complexity of events that affect the energy requirements of a specific geographic region over a 10 or 20-year period can produce serious errors in forecasting future requirements. As a result, the BPA, in the 1987 Resource Strategy report, gives the results of studies of several load-growth paths. If load-growth should follow the low-growth path, BPA predicts that neither the region nor BPA will need additional resources during the next 20 years. If regional loads grow at the high forecasted rate studied in the report, however, BPA will need additional resources in 1991, and the region will need additional resources in 1989. History has demonstrated that either of these extremes can become a reality.

Since the proposed project, if licensed, is expected to go on-line (into commercial operation) in the early 1990's, it is likely that the applicant may need the output of the proposed project to avoid the curtailment of its BPA contract.

Although project power is currently not needed to meet a resource deficit in the region or to meet BPA load responsibilities, the output would be useful in off-loading fossil-fueled units, thereby conserving nonrenewable primary energy resources and reducing atmospheric pollution.

The applicant states that it plans to continue the purchase of its total requirements from BPA and to sell the total output of the proposed project as long as BPA power is available, or until parallel buying and selling is not financially advantageous. At such a time as the project power is used to supply the applicant's customers, in-system dispatch ability would be advantageous to the applicant. The project power would also reduce the applicant's dependence on outside purchases, and would reduce concerns about future purchase prices and future availability.

C. Conservation and Load Management

Because the applicant is a municipal utility, section 10(a)(2)(c) of the Federal Power Act (Act), as amended by the Electric Consumers Protection Act of 1986 (ECPA), requires the Commission to address in writing the applicant's present and planned electricity consumption efficiency improvement programs, including its plans, performance, and capabilities for encouraging or assisting its customers to conserve electricity cost effectively, taking into account published policies restrictions and the requirements of relevant state regulatory authorities.

In response to the staff's request for information under section 10(a)(2)(c), the applicant submitted a report entitled, "Conservation and energy efficiency programs, as of December 31, 1986."

The present contract with BPA requires the applicant to comply with the BPA Residential Weatherization Program and to encourage the builders of new homes to follow construction practices that will qualify for certification as a "Super Good Cents Home," according to BPA standards and specifications. Under the residential weatherization program, as of December 31, 1986, the applicant has performed 2,146 residential energy audits and weatherized 1,081 homes. Under the Commercial and Residential Water Heater Wrap Program, the applicant, through counselling and public information programs, has persuaded a substantial fraction of its customers to wrap hot water tanks with thermal insulating material or wraps. The applicant has also been successful in promoting the conversion of street and area lighting to much more efficient, high-pressure sodium lights.

The staff believes that the applicant has made a good-faith effort to conserve electric energy and to comply with the objectives of section 10(a)(2)(c) of the Act.

III. PROPOSED PROJECT AND ALTERNATIVES

A. Proposed Project

1. Project Description

The proposed project would consist of the following: (1) a 210-foot-long, 20-foot-wide, rectangular concrete intake channel; (2) a 10-foot-diameter, 85-foot-long steel penstock; (3) a 64-foot-long by 35-foot-wide powerhouse, containing one generating unit with an installed capacity of 4,200 kW at a design head of 80 feet; and (4) a 3-mile-long, 12.5 kilovolt (kV) transmission line, connected to the applicant's existing Lambert substation.

The applicant would operate the proposed project using releases to the AWSS supplied to the north fish ladder by the Corps.

2. Applicant's Proposed Mitigative Measures

To protect water quality and to prevent adverse effects on the Corps' operation of the north fish ladder and of the associated AWSS, the applicant would confine construction activities affecting the AWSS to the normal scheduled shutdown period of the ladder and the AWSS, from December 1 through February 28. The applicant would replant vegetation disrupted by construction activity.

To protect downstream migrant anadromous salmonids and to avoid affecting the operation of the AWSS in the event of an emergency shut-down of the proposed project, the applicant would provide fish screens and a downstream fish bypass system at the penstock intake. The fish screens would be designed for an approach velocity of 1.0 foot per second (fps). The applicant proposes to use an open-baffled flume fish bypass system if there is an agency-accepted design developed by the time of final project design. To prevent accumulation of debris on the fish screens, the applicant would install the screens at a shallow angle to the flow, and would hydraulically flush debris with high pressure hoses, actuated by predetermined head differentials. Temporary back-up screens would be provided to allow removal and cleaning of the main screen panels.

B. Alternatives to the Proposed Project

The alternative to the proposed action is denial of license. If the license is denied, the applicant would continue to purchase capacity and energy from BPA, as long as available.

No action would prohibit the applicant from constructing the proposed project. No action would involve no alterations to the existing environment and would preclude the applicant from producing electrical power at the site.

IV. CONSULTATION AND COMPLIANCE

A. Agency Consultation

Commission regulations require prospective applicants to consult with the appropriate resource agencies before filing an application for license. This consultation constitutes an initial step in compliance with the Fish and Wildlife Coordination Act, the Endangered Species Act, the National Historic Preservation Act, and other federal statutes. Prefiling consultation must be complete and must be documented in accordance with the Commission's regulations.

After the Commission accepts the application, concerned entities may submit formal comments during a public-notice period. In addition, organizations and individuals may petition to intervene and become a party to any subsequent proceedings. The Commission makes the comments provided by concerned entities part of the record, and the staff considers the comments during the review of the proposed project.

After the Commission issued a public notice of the proposed project on March 17, 1986, the following entities commented on the application.

| <u>Commenting entity</u> | <u>Date of letter</u> |
|---|-------------------------|
| Department of the Army, Portland District Corps of Engineers | February 14, 1986 |
| Washington Department of Fisheries | May 15, 1986 |
| <u>Intervenors</u> | <u>Date of petition</u> |
| Washington Departments of Game and Fisheries | May 14, 1986 |
| National Marine Fisheries Service | May 16, 1986 |
| Confederated Tribes of the Warm Springs Reservation of Oregon and Columbia River Inter-Tribal Fish Commission | May 16, 1986 |
| Confederated Tribes and Bands of the Yakima Indian Nation | May 16, 1986 |

B. Water Quality Certification

As required by Commission Order No. 464, the staff notified the Washington Department of Ecology (WDE) that for the proposed project, the certification requirements of section 401(a)(1) of the Clean Water Act (33 United States Code, section 1341(a)(1)(1982)) were waived. In a letter dated April 2, 1987, the WDE was given 30 days to file recommendations on water quality. Although the WDE provided recommendations in a letter dated June 2, 1987, this environmental assessment addresses these recommendations.

C. Pacific Northwest Electric Power Planning and Conservation Act

Under Section 4(h) of the PNEPPCA, the Northwest Power Planning Council (Council) developed the Columbia River Basin Fish and Wildlife Program (Program) to protect, mitigate, and enhance fish and wildlife resources associated with the development of hydroelectric projects. The Program contains a framework for assessing the impacts of new hydroelectric development on fish and wildlife resources and lists a number of general mitigative measures that should be implemented for any new development.

The program requires that fish and wildlife agencies, Indian tribes, and the Council be consulted during the study, design, construction, and operation of new hydroelectric projects. The Commission's regulations require applicants to initiate prefiling consultation with these entities and to give these entities the postfiling opportunity to review and to comment on the license application. The applicant has conducted this consultation process.

The Council states in the Program that authorization for new hydroelectric projects should include conditions of development that would mitigate the impacts of the project on fish and wildlife resources. The applicant proposes ways to mitigate adverse impacts. Moreover, where practical, the Commission has the authority to order alterations of project structures and operations, in order to take into account the Council's Program. Accordingly, the staff concludes that the proposed project does not conflict with the applicable provisions of the Council's Program.

V. ENVIRONMENTAL ANALYSIS

A. Proposed Project

The area of the proposed project is bounded on three sides by the north fish ladder and on the fourth side by the Dalles dam. The

proposed project would be built within an area previously disturbed during construction of the Dalles dam; this area consists primarily of barren rock with little vegetative cover, which the applicant would replace after construction. The area receives little use by wildlife. Although the area is fenced, the Corps provides access to the fish passage facilities for public viewing. The views in the area are dominated by the Dalles dam and associated facilities. Because of these circumstances, the staff concludes that the proposed project would not affect soils and geology, vegetation, wildlife, recreation, or socioeconomic.

1. General Description of the Locale

The Dalles dam is situated on the Columbia River at river mile 191.5. The Deschutes River is a major tributary that enters the Columbia River, 12 miles upstream from the proposed project area. The climate of the Columbia River drainage, which is located in the belt of the prevailing westerlies, is characterized by wet, relatively mild winters, and warm, dry summers.

The Dalles dam is located in Klickitat County, Washington, and in Wasco County, Oregon. The major population center in the project area is the Dalles, Oregon, with a population of approximately 8,500. Tourism is an important regional industry; recreational activities include fishing, hunting, boating, camping, skiing, and hiking.

2. Water Resources

Affected Environment: The Dalles dam is 45.4 miles upstream from Bonneville dam and 24.1 miles downstream from John Day dam. The Columbia River drains approximately 260,000 square miles of the Pacific Northwest. Drainage areas include most of Washington, Oregon, and Idaho, and portions of Montana, Wyoming, Utah, Nevada, and British Columbia, Canada (Federal Energy Regulatory Commission, 1987). Flow in the Columbia River is regulated by an extensive series of dams and reservoirs. Flows in the river are characteristically greatest from mid-April through July, with annual peak flows usually occurring in June. In 1984, the maximum average monthly flow of 343,700 cubic feet per second (cfs) occurred in June, and the minimum flow of 115,800 cfs occurred in September (Northern Wasco County People's Utility District, 1985, supplemental information).

The Dalles dam impounds Lake Celilo. Lake Celilo is 24 miles long and has a surface area of 9,400 acres. Operation of the upstream John Day dam causes daily fluctuations in the reservoir of as much as 5 feet.

The existing water quality of the Columbia River is generally good. The state of Washington classifies the water of the Columbia River at the Dalles dam as Class A, which is considered excellent (Washington Department of Ecology, 1982). The water quality of class A meets or exceeds the requirements for all, or substantially all, uses, including domestic, industrial, and agricultural water supply, salmonid migration, rearing, spawning, and harvesting, wildlife habitat, recreation, and commerce and navigation.

Dissolved oxygen (DO) concentrations are generally high, and range between 73 and 136 percent of saturation (Corps of Engineers, 1981). Water temperatures vary seasonally. At the Dalles dam in 1984, for example, water temperature was 35 degrees Fahrenheit (°F) in January; water temperature increased to 71°F in August, and decreased to 39°F in December (Corps of Engineers, 1984b). Water clarity is generally greatest during the latter half of the year, when river flows decrease (Northern Wasco County People's Utility District, 1985).

Environmental Impacts and Recommendations:

Excavation of the area for the proposed powerhouse and construction of the intake channel could increase levels of turbidity and sedimentation in the immediate project area. The introduction of oil, paint, concrete, and other toxic substances during project construction and operation could result in fish kills in downstream areas and could interfere with upstream fish passage.

The WOE states that the licensee must obtain a "Water Quality Standards Modification" before starting work in the waterway, and must submit to WDE the plan of work for the portion of the project within the waterway, a copy of the Hydraulics Project Approval, and an explanation of how the state Environmental Protection Act has been addressed. To protect the water quality, the WDE recommends that the licensee do the following: (1) prepare an "Oil spill prevention, containment, and counter-measure plan," which would include all oil-filled equipment associated with the proposed project; (2) prevent any petroleum products, paint, chemicals, or other harmful materials from entering the water; (3) dispose all construction debris on land; (4) minimize turbidity level increases resulting from work in the waterway; (5) allow for the complete drying of all lumber treated with creosote or other protective material before its use in or near the waterway; (6) cure concrete a minimum of 7 days before any contact with the water; (7) prevent the appearance of a visible petroleum product sheen associated with mobile equipment that enters the water; and (8) notify the WDE at least 5 days in advance of the start of dredging or other work in the waterway.

Construction of the proposed project could result in the degradation of water quality in the vicinity of the north fish ladder through the introduction of sediments and toxic substances. These impacts could, in turn, result in fish kills and could interfere with fish passage through the Dalles dam area. The applicant, however, has not yet developed a comprehensive plan to protect water quality during project construction and operation. Therefore, the licensee, after consultation with the appropriate state and federal agencies, should develop a comprehensive plan to control erosion and to minimize the quantity of sediment and other potential water pollutants resulting from project construction, spoil disposal activities, project operation, and maintenance. The plan should be filed for Commission approval before project construction begins.

Unavoidable Adverse Impacts: Construction-related activities would cause minor, short-term increases in turbidity in areas downstream from the proposed project.

3. Fishery Resources

Affected Environment: The fish community of the Columbia River in the vicinity of the Dalles dam is diverse and is composed of anadromous and resident species. Resident game fish include bluegill (*Lepomis macrochirus*), smallmouth bass (*Micropterus dolomieu*), largemouth bass (*M. salmoides*), yellow perch (*Perca flavescens*), and walleye (*Stizostedion vitreum*). Other resident species in the area are white sturgeon (*Acipenser transmontanus*), mountain whitefish (*Prosopium williamsoni*), northern squawfish (*Ptychocheilus oregonensis*), and prickly sculpin (*Cottus asper*).

The most valuable fish species that pass through the area are the endemic anadromous salmonids. These species include chinook salmon (*Oncorhynchus tshawytscha*), coho salmon (*O. kisutch*), sockeye salmon (*O. nerka*), and steelhead trout (*Salmo gairdneri*). Historically, the Columbia River supported significant runs of these species before the mid-19th century. It has been estimated that between 7.5 and 8.9 million fish returned to the river each year to spawn (Pacific Northwest Utilities Conference Committee, 1987). As settlement of the area developed, however, run sizes decreased substantially because of fish harvest, habitat degradation, and the construction and operation of dams. Significant numbers of American shad (*Alosa sapidissima*) also occur within the Columbia River.

Counts of upstream migrant anadromous fishes at the Dalles dam have averaged 417,000 for the 28-year period from 1957 to 1984. Counts of chinook salmon, steelhead trout, sockeye salmon, and coho salmon

have averaged 220,178, 121,514, 63,267, and 13,030, respectively, during this period. In addition, 192 chum salmon (*O. keta*) and 63 pink salmon (*O. gorbuscha*) have been observed passing the Dalles dam, although few have been observed in recent years.

Chinook salmon is the most abundant species of salmon that passes through the Dalles dam area, and consists of three runs: spring (January 1 through June 3), summer (June 4 through August 3), and fall (August 4 through December 31). Periods of upstream migration for these runs occurs virtually throughout the year. The annual run sizes at the Dalles dam between 1957 and 1984 for spring, summer, and fall chinook have averaged 66,912, 48,853, and 99,307, respectively. The 10-year average counts for chinook salmon runs for the period between 1975 and 1984 were 24, 42, and 9 percent less than the 28-year average counts. Both spring and summer chinook spawn in tributaries, whereas fall chinook spawn in the Columbia River mainstem, particularly in the Hanford Reach (Bell, 1984), upstream of McNary dam (100.5 miles upstream of the Dalles dam). Natural spawning populations of fall chinook have averaged 25,600 between 1978 and 1984; this run has responded well to efforts to stabilize flows at the existing Priest Rapids Dam Project (FERC No. 2114), and to measures at lower Columbia River projects to assist downstream migration (letter from William R. Wilkerson, Director, Department of Fisheries, Olympia, Washington, October 30, 1985).

Coho salmon adults migrate through the Dalles dam area from early July through November; peak migration occurs in September (Corps of Engineers, 1984b). An annual average of 13,030 coho salmon have been counted passing through the Dalles dam area between 1957 and 1984; the 10-year average (1975 to 1984) is 9,827. Coho salmon that pass the Dalles dam area spawn in tributaries to the mid- and upper-Columbia River (Bell, 1984).

Sockeye salmon adults, comprising early and late runs, migrate through the project area between May and October, with most fish passing through in June and July (Corps of Engineers, 1984b). The 28-year average count of sockeye salmon at the Dalles dam (1957 to 1984) is 63,267; the 10-year average (1975 to 1984) is 49,828. Substantial increases in the adult run size occurred in 1983 and 1984. The Columbia River sockeye salmon run is produced entirely of wild stocks, and efforts to supplement this run by artificial means have so far been unsuccessful (letter from Tim Weaver, Attorney for the Confederated Tribes and Bands of the Yakima Indian Nation, Yakima, Washington, May 16, 1986). Sockeye salmon spawn in tributaries upstream of lakes (Bell, 1984), principally using Columbia River tributaries upstream of Priest Rapids dam (Northern Wasco County People's Utility District, 1985b).

Steelhead trout runs are comprised of three races: an "A" group (earlier summer run), a "B" group (later summer run), and a winter run. The upstream passage seasons for the "A", "B," and winter runs are June to early August, August to October, and November to mid-June, respectively (Bell, 1984). The 28-year average count of steelhead trout passing through the Dalles dam area (1957 to 1984) is 124,927, which approximates the 10-year average for the period 1975 to 1984 of 125,238 (Corps of Engineers, 1984b). Steelhead trout spawn in Columbia River and Snake River drainages (Bell, 1984; Northern Wasco County People's Utility District, 1985b.)

The downstream migration of juvenile anadromous salmonids consists primarily of subyearling (less than 1 year of age) and yearling chinook salmon, coho salmon, sockeye salmon, and steelhead trout (Northern Wasco County People's Utility District, 1985b). The Northern Wasco County People's Utility District (1985a) states that the smallest of the juvenile migrants passing through the Dalles dam area probably are subyearling chinook salmon, which could include the spring, summer, and fall races, although subyearling fall chinook salmon are anticipated to be most abundant. Bell (1984) indicates that spring and summer chinook salmon juveniles typically migrate as yearlings, whereas fall chinook migrate as subyearlings. The juvenile downstream migration season for chinook, coho, and sockeye salmon and steelhead trout generally takes place from spring through fall (Bell, 1984), with variable peak movement periods occurring within this time frame, depending on species.

The Corps has operated upstream fish passage facilities at the Dalles dam since 1957. Upstream fish passage facilities consist of two fish ladders, one on the Oregon shore (east ladder) and the other near the Washington shore (north ladder). The east ladder passes upstream migrants collected at the south end of the spillway and across the downstream face of the powerhouse; the north ladder passes fish collected at the north end of the spillway. Approximately 90 percent of upstream fish passage is through the east ladder (Northern Wasco County People's Utility District, 1985a); the east ladder is next to the powerhouse containing 22 main generating units, so fewer fish are attracted to the north ladder. The north ladder, within which the proposed project would be constructed, operates between March 1 and November 30 of each year, and is shut down from December 1 through February 28. Exceptions to the scheduled shutdown period may occur when repairs are necessary to the east ladder (Corps of Engineers, 1984b). The north ladder currently operates with a flow of 70 cfs, and the AWSS, during nonspill conditions at the dam, operates with a flow of 730 cfs; attraction water flows are increased to aid the attraction of upstream migrants during periods of spill.

Downstream fish passage facilities at the Dalles dam consist of an ice and trash sluiceway, which extends the length of the powerhouse (Northern Wasco County People's Utility District, 1985a). Downstream migrants are skimmed from the forebay and released in the tailrace, when the sluiceway gates are open.

Columbia River Basin Restoration Efforts

Various entities are making efforts to restore Columbia River anadromous fish runs. Foremost among these efforts is the Council's Program. The Program was adopted in 1982, with amendments added in 1984 and 1987. Under the 1987 Program, the Council has established an interim goal of doubling the current run size of adult fish, from approximately 2.5 million to 5 million (Northwest Power Planning Council, 1987). As part of a systemwide approach, potential fish production of each Columbia River subbasin will be evaluated to determine the relative potential contribution of each toward the interim goal. Efforts to achieve this goal will be directed to areas upstream of Bonneville dam and to the interaction of fish passage, harvest regulation, and habitat management. Numerous other programs are being implemented within the Columbia River Basin, including the Bureau of Reclamation's Yakima River Basin Enhancement Project, the Lower Snake River Compensation Plan, and the Hells Canyon Complex settlement (letters from S. Timothy Wapato, Executive Director, Columbia River Inter-Tribal Fish Commission, Portland, Oregon, May 16, 1986, and Tim Weaver, Attorney for the Confederated Tribes and Bands of the Yakima Indian Nation, Yakima, Washington, May 16, 1986).

Between August 1984 and March 1985, several state and federal fish and wildlife agencies and tribes conducted a study, entitled "Interim Categorization of Proposed Hydroelectric Projects in the Pacific Northwest Based on their Potential Impacts to Fish and Wildlife Resources." Agencies and tribes participating in the study were the Idaho Department of Fish and Game, the Montana Department of Fish, Wildlife, and Parks, the Oregon Department of Wildlife, the Washington Departments of Wildlife (WDW) and Fisheries (WDF), the U.S. Fish and Wildlife Service (FWS), the National Marine Fisheries Service (NMFS), and the Columbia River Inter-Tribal Fish Commission. In the study, the agencies place the proposed project under category II-B, a designation indicating that site-specific or cumulative impacts are not clearly determinable by the appropriate fish and wildlife agencies and tribes. The agencies and tribes would require additional information to reclassify this project into a category that would permit or preclude development. Specific information that is needed includes the adequacy of the design of the necessary

fish facilities, the effect of changes in the operating criteria of the AWSS, and the size of juvenile fish at the project area (letter from Dale R. Evans, Division Chief, National Marine Fisheries Service, Portland, Oregon, October 30, 1985).

Environmental Impacts and Recommendations:

Turbidity and sedimentation

Increased levels of turbidity and sedimentation generated during project construction, particularly during the removal of an estimated 6,000 cubic yards of material, could disrupt the upstream migration of adult anadromous fishes. Although increased turbidity likely would be rapidly diluted by Columbia River flows downstream, elevated turbidity levels in the immediate vicinity of the north ladder might interfere with upstream migrants locating the ladder entrance and might delay migration. In addition, the introduction of toxic substances during project construction could result in fish kills in the area of the fishway.

Although applicant has not developed a detailed erosion and sediment control plan for minimizing the impacts of construction on fish passage, the implementation of measures to protect water quality, addressed previously in section V.A.2., also would protect the fishery resources and would minimize impacts to upstream fish passage.

Operation of the Attraction Water Supply System and North Ladder

Depending on the construction schedule for the proposed project, construction activities could adversely affect the Corps' operation of the AWSS. Interference with the operation of the AWSS during project construction or operation would adversely affect upstream fish passage.

Several state and federal agencies and tribes have expressed concern about the proposed project's effects on the operation of the AWSS and of the north ladder. The WDW and the WDF state that construction and operation of the proposed project could affect the efficient operation of the north ladder. One of the primary concerns of the NMFS is to ensure that use of the AWSS for project generation does not impair optimum operation of the north ladder. The NMFS states that variance from criteria established by the fishery agencies and the tribes for operating the existing fishway could reduce attraction flows at the ladder entrances, thereby reducing the efficiency of adult fish passage. Specifically, the NMFS states that operation of the proposed project must be

considered secondary to the purpose of fishery resource protection at the north ladder, which includes operation of the AWSS to provide optimum adult fish passage conditions at all times; the NMFS says that the project must operate within the constraints of these purposes and must not impair or alter these purposes. In addition, the NMFS states that the proposed project must be designed, built, and operated in a manner that provides sufficient flexibility to modify operation of AWSS to improve adult fish passage conditions. The Confederated Tribes of the Warm Springs Reservation of Oregon and the Columbia River Inter-Tribal Fish Commission (Tribes) state that while the applicant has acknowledged that the provision of flows must take priority over project operation, the applicant has not developed adequate information regarding guarantees of flows to the AWSS during construction and during emergency or malfunction situations. In addition, the Tribes say that project design must include the flexibility to alter project operations when needed, to improve adult fish passage through modified operation of the AWSS.

The applicant acknowledges that the primary constraint on the proposed project is that the project must not degrade the operation of the existing north ladder and the AWSS. As to the scheduling of project construction, the applicant acknowledges that any construction work that affects fish passage must be conducted from December to February, during the maintenance shutdown period for the north fish ladder. The applicant says that preparatory work that would not affect the existing system, such as move-in, surface preparation, and excavation of the penstock passage, penstock headworks, and intake water passage, could be conducted during the operational period for the ladder. The applicant would limit preparatory efforts to work that would not affect ladder operation. With regard to project operation, the applicant states that turbine and bypass flows would be controlled to match the existing discharge characteristics of the Taintor gate, that regulates the AWSS flows; consequently, the applicant does not anticipate any discernable changes in operation of the existing AWSS. In addition, the applicant states that project design includes the flexibility to accommodate changes in AWSS operating criteria.

Continued operation of the north ladder and the AWSS, as regulated by the Corps, is essential to efficient upstream passage of adult anadromous fishes. Despite the greater number of migrants that use the east ladder (approximately 90 percent), the north ladder contributes substantially to upstream passage. Further, the north ladder becomes increasingly important when the east ladder is shut down for maintenance or repairs. Any interference with operation of the north ladder and the AWSS that would be caused by construction,

operation, or maintenance of the proposed project would pose an unacceptable risk to successful upstream fish passage. A critical consideration would be ensuring that construction activities would not preclude operation of the AWSS if maintenance or emergency shutdown of the east ladder required operation of the north ladder during the construction period. To ensure that upstream fish passage is fully protected and that the Corps' operation of the north ladder and AWSS is maintained, the licensee should coordinate construction activities and project operation with the Corps. Further, the licensee should reach an agreement with the Corps concerning operation of the proposed project, which may include future alterations of flows to the AWSS available for project operation.

Downstream Fish Passage

Downstream-migrating juvenile anadromous fishes that enter the AWSS would be subject to entrainment if fish screens are not provided at the project intake or to impingement if fish screens are not properly designed and operated. An improperly designed bypass system would subject downstream migrants to injury or to delays in downstream passage.

A major concern of the Corps, the state and federal fish and wildlife agencies, the Tribes, and the Confederated Tribes and Bands of the Yakima Indian Nation (Yakimas) is the proper design, operation, and maintenance of the intake fish screens and downstream bypass system. The Corps states that the project intake must be adequately screened to protect downstream migrants, and that all bypassed fish must be moved to a safe place in the tailrace. Specifically, the Corps states that the vertical velocity component through the fish screen should not exceed 1.0 fps. With regard to the downstream fish bypass, the Corps notes that the passage of debris through the bypass system will be hazardous to downstream migrants.

The WDW and the WDF state that the intake channel must be properly designed and screened to meet approach velocities consistent with the size of the juvenile fish present. The WDF specifically recommends that the licensee should design the intake fish screens with an approach velocity of 0.7 fps; if the licensee wishes to conduct studies to demonstrate that a greater approach velocity would protect downstream migrants, the WDF would adjust its approach velocity requirements accordingly (letter from William R. Wilkerson, Director, Washington Department of Fisheries, Olympia, Washington, April 8, 1985). The WDF also cites the need for back-up screens when fish screens are raised for cleaning. With regard to the

design of the downstream migrant bypass, both the WDW and the WDF express their preference for an open-baffled flume bypass for juveniles, as opposed to a closed system that could cause maintenance problems and fish injury or mortality (letters from Claude Stoddard, Regional Habitat Program Manager, Washington Department of Game, Vancouver, Washington, October 30, 1985, and William R. Wilkerson, Director, Washington Department of Fisheries, Olympia, Washington, December 3, 1984).

A primary concern of the NMFS is that downstream migrating juvenile fish attracted to the project intake not be injured or killed. The NMFS recommends that the intake fish screens be designed to provide an approach velocity of 1.0 fps, that a post-construction evaluation be conducted, and that project operation be modified to alleviate any significant fishery problems (letter from Dale R. Evans, Division Chief, National Marine Fisheries Service, Portland, Oregon, October 30, 1985). In addition to the need for intake fish screens, the NMFS states that an effective juvenile bypass is necessary. The NMFS currently recommends an open-baffled flume bypass system, but says that further consultation with the fishery agencies is needed before final design (letter from Dale R. Evans, Division Chief, National Marine Fisheries Service, Portland, Oregon, October 30, 1985).

The NMFS states that it reserves the right to prescribe any necessary upstream and downstream fish facilities, pursuant to section 18 of the Act, 4/ which must be designed and operated to comply with the NMFS' screening and passage criteria. These measures include, but are not limited to, the following: (1) consultation during additional preliminary engineering; (2) fishery agency and tribal approval of conceptual design prior to initiation of final design; (3) fishery agency and tribal review and approval of final design drawings at 50, 95, and 100 percent of completion; (4) fishery agency and tribal inspection during construction and at the completion of construction prior to watering up; (5) operating the fish facilities year-round, except for agency- and tribal-

4/ Section 18 of the Act provides: "The Commission shall require the construction, maintenance, and operation by a licensee at its own expense of .. such fishways as may be prescribed by the Secretary of the Interior or the Secretary of Commerce."

approved maintenance shutdowns; (6) provisions for dewatering the entire screen for regular inspection and maintenance, including a regular inspection, repair, and maintenance schedule; (7) provisions for routine access for inspection during project operation; and (8) implementation of a postconstruction evaluation of fish protection facilities, including the implementation of any necessary modifications to project facilities or operation. The staff was informed that a fishway prescription by the NMFS would not prescribe measures beyond those already discussed during the consultation process (personal communication, Brian Brown, Fishery Biologist, Environmental and Technical Services Division, National Marine Fisheries Service, Portland, Oregon, October 20, 1987).

Although the FWS did not comment in response to the public notice for the proposed project, it did comment during the pre-application consultation period. Specifically, the FWS recommends that if data show that fish shorter than 60 mm in length are not normally present in the project area, then a 1.0 fps approach velocity would be acceptable; if, however, fish smaller than 60 mm are present in significant numbers, then the maximum approach velocity cannot exceed 0.5 fps (letter from Russel D. Peterson, Field Supervisor, U.S. Fish and Wildlife Service, Department of the Interior, Portland, Oregon, January 23, 1985). In addition, the FWS states that considering the maintenance and evaluation problems associated with a closed bypass, the initial design plans should provide for an open-flume bypass.

Both the Tribes and the Yakimas believe that the existing and potential production of the anadromous fishery resources in the Columbia River must be fully protected from adverse effects associated with the proposed project. The Yakimas state that downstream migrating juvenile fish attracted to the intake flow must not be injured or killed and that the applicant should provide plans for and should study open-flume bypass methods. The Tribes state that the applicant has estimated project-related impacts to the fishery resources, based on the numbers of juvenile migrants that have passed through the project area in recent years, but points out that current numbers are much reduced. The Tribes say that increased numbers of fall chinook subyearling migrants will be released from the Lyons Ferry hatchery complex on the Snake River, and that significant measures are being taken to build mid-Columbia River summer chinook salmon runs, some of which would be expected to be less than 60 mm in length as downstream migrants. The Tribes note that the applicant has agreed to conduct a sampling study to

determine the occurrence and number of downstream migrants using the AWSS, and state that a decision to license the proposed project should be delayed until the study is completed. In addition, the Tribes are concerned about debris accumulation, which would alter uniform flow through the fish screens.

As stated previously, the applicant proposes to install fish screens across the project intake to prevent turbine mortality of juvenile downstream migrants. The screens would be designed to maintain an approach velocity of 1.0 fps, and would include back-up screens, which would be installed when the main screens are raised for cleaning. Debris accumulation on the screens would be minimized by the shallow angle of the screen face, and the applicant would hydraulically flush debris from the screens with high pressure hoses. The applicant also proposes to install an open-baffled flume, if there is an agency-accepted design developed by the time of final project design.

The applicant believes that an approach velocity of 1.0 fps complies with the NMFS design criteria, which is intended to protect fish longer than 60 mm. In support of its belief that few fish less than 60 mm in length would occur in the project area, the applicant provides data on downstream migrants from John Day dam and from the Deschutes River. The applicant estimates that between 1980 and 1984, 135 subyearling chinook salmon less than 60 mm in length that passed John Day dam would have passed through the north ladder's AWSS. Assuming a 4-percent fish screen mortality rate and a 5-percent return rate of adults from chinook salmon less than 60 mm long, adult losses would not have exceeded one fish per year. For subyearling chinook originating from the Deschutes River, the applicant estimates equivalent returning adult losses resulting from the proposed project as two adult fish (based on 1979 data) and one fish (based on 1977 data).

At the request of the Commission, the applicant collected fish samples at the AWSS in 1986 to determine the species composition and length distribution of downstream migrants. Since the applicant collected few fish, however, the fishery agencies questioned the data's validity, saying that anticipated low-flow conditions in 1987 would likely produce similar results; as a result, the applicant conducted no further sampling. Although the 1986 data may not accurately characterize the downstream fish passage through the AWSS, 29 percent of captured fish were chinook salmon less than 60 mm long.

Based on data from the applicant, it appears that significant numbers of subyearling chinook salmon less than 60 mm long would not occur at the AWSS. Consequently, compliance with the agencies' 1.0 fps approach velocity criterion probably would protect downstream migrants that pass through the AWSS. The applicant's estimation of the number and length of fish that pass through the system is not based on comprehensive, site-specific data, however. Further, the applicant's calculations do not consider anticipated increases in anadromous fish runs resulting from various enhancement measures being undertaken throughout the Columbia River Basin. Achieving the Program's interim goal of doubling the current adult run size to 5 million fish would increase the numbers of downstream migrants that pass through the Dalles dam area.

As the majority of juvenile salmonids produced in the Columbia River Basin must pass through the Dalles dam area, the staff believes that the licensee should design intake fish screens with an approach velocity of 0.5 fps. This approach velocity would protect downstream migrants both longer and shorter than 60 mm in length. Although significant numbers of juveniles less than 60 mm long currently may not pass through the project area, enhancement efforts may increase the number of this size fish in the future. In addition, unusual, high-flow events, which may have been responsible for the relatively large proportion of juvenile fall chinook salmon less than 60 mm long recovered in the applicant's sampling in 1986 by prematurely flushing subyearling salmon from the Hanford reach (personal communication, Kevin Bauersfeld, Fish Biologist, Washington Department of Fisheries, Tumwater, Washington, October 2, 1987) may be expected in the future. Therefore, the licensee, after consultation with the Corps, the Council, the state and federal fish and wildlife agencies, the Tribes, and the Yakimas, should develop and submit for Commission approval functional design drawings of intake fish screens and a maintenance and operating plan.

In addition, the licensee, after consultation with the Corps, the Council, appropriate state and federal fish and wildlife agencies, the Tribes, and the Yakimas, should develop functional design drawings of a downstream fish migrant bypass facility including an operation and maintenance plan. Further consultation and the availability of results of studies of downstream bypass designs at Little Goose dam and at Lower Granite dam would allow the licensee to develop an appropriate bypass design to safely and efficiently pass downstream migrants. Important considerations in any bypass design include debris removal, which would be facilitated by an open-flume design, and the location of the bypass exit. Releasing downstream migrants in slack water areas would subject them to predation and could delay their downstream migration.

To ensure that the intake fish screens and downstream migrant bypass facilities are fully protective of juvenile anadromous fishes, the licensee, after consultation with the Corps, the state and federal fish and wildlife agencies, the Tribes, and the Yakimas, should develop and implement a plan to monitor the effectiveness of these facilities. The licensee should include in the plan provisions for rapidly altering project operation, if needed to protect downstream migrants, for example, by reducing flow diversions for project operation or shutting down the project. The licensee also should file an implementation schedule, a schedule for filing the results with the Commission and with the consulted agencies, the Tribes, and the Yakimas, and recommendations for changes in project facilities or project operation based on monitoring results. In addition, the licensee should permit personnel from the consulted entities, upon showing proper credentials, to inspect the fish screens, the downstream fish bypass facilities, related project records, and other fish and wildlife protective measures, upon showing proper credentials.

Unavoidable Adverse Impacts: Construction activities would cause short-term increases in turbidity that could affect upstream fish passage on a short-term basis. Although some minor levels of injury or mortality of downstream migrant salmonid juveniles might result from contact with the project's intake fish screens and bypass facility, provisions for monitoring the effectiveness of these facilities in protecting the fishery resources, including provisions for rapidly altering project operation, would reduce unavoidable impacts to minor levels.

4. Threatened and Endangered Species

Affected Environment: The bald eagle (*Haliaeetus leucocephalus*) and the peregrine falcon (*Falco peregrinus*) are the only federally listed threatened or endangered species that may occur within or near the project area (personal communication, Diana Hwang, Fish and Wildlife Biologist, U.S. Fish and Wildlife Service, Department of the Interior, Portland, Oregon, November 5, 1987). Peregrine falcons occur as seasonal migrants and may overwinter in the Columbia River area; however, no nesting sites have been reported in the project area. Bald eagles may occur in the area during the wintering season from about October 31 through March 31, but no sightings at the Dalles dam have been reported (personal communication, Diana Hwang, Fish and Wildlife Biologist, U.S. Fish and Wildlife Service, Department of the Interior, Portland, Oregon, November 5, 1987).

Environmental Impacts and Recommendations: The proposed project would not affect either the food supply or roosting sites and day perches of the bald eagle. Although the bald eagle consumes birds, waterfowl, and fish (Federal Energy Regulatory Commission, 1987), because of the limited habitat value of the project area, the proposed project would not affect waterfowl populations or habitat for other bird prey species. Similarly, the food source of the peregrine falcon, which consists of avian prey, would be unaffected. Given the recommended mitigative measures discussed previously in section V.A.3. for the fishery resources, there would be no impacts to the bald eagle's fish food supply. As the project area has been previously disturbed and provides no reported roosting or perching sites, the proposed project would not affect roosting sites and day perches.

The applicant has not decided whether the 12.5-kV transmission line from the powerhouse to the Dalles bridge would be above ground or underground. As the transmission line is within the 4 to 69-kV range that poses the greatest threat of electrocution of raptors, including bald eagles and peregrine falcons, the licensee should develop a transmission line design plan to prevent raptor electrocutions associated with the transmission line, should the final project design include the provision of an above-ground transmission line. This plan should be prepared in accordance with guidelines in the 1981 publication, "Suggested Practices for Raptor Protection on Power Lines," Raptor Research Report No. 4, published by the Raptor Research Foundation, Inc.

Unavoidable Adverse Impacts: None.

5. Cultural Resources

Affected Environment: No properties have been identified in the project area as listed on or eligible for listing on the National Register of Historic Places (letter from Robert G. Whitlam, State Archeologist, Office of Archeology and Historic Preservation, Olympia, Washington, December 12, 1983).

Environmental Impacts and Recommendations: Land-clearing and land-disturbing activities could adversely affect archeological and historic properties not previously identified in the project area. Therefore, if the licensee encounters such properties during the development of project works or related facilities, the licensee should stop land-clearing and land-disturbing activities in the vicinity of the properties and should consult with the State

Historic Preservation Officer (SHPO) about the eligibility of the properties and about any measures needed to avoid or to mitigate effects on the properties. In addition, before beginning land-clearing or land-disturbing activities within the project boundaries, other than those specifically authorized in the license, the licensee should consult with the SHPO about the need to conduct an archeological or historical survey and the need for avoidance or mitigative measures. In these instances, 60 days before starting such land-clearing or land-disturbing activities, the licensee should file a plan and a schedule for conducting the appropriate studies, along with a copy of the SHPO's written comments concerning the plan and the schedule. The licensee should not start land-clearing or land-disturbing activities, other than those specifically authorized in this license, or resume such activities in the vicinity of an archeological or historic property discovered during construction, until informed that the requirements discussed above have been fulfilled.

Unavoidable Adverse Impacts: None.

6. Cumulative Impacts

The WDF, WDW, and the Tribes state that there must be an evaluation of the cumulative effects caused by the presence and operation of the proposed Dalles Dam North Fishway Hydroelectric Project and of other projects in the Columbia River Basin.

The Council estimates that in the basin, long-term, cumulative adverse impacts associated with hydropower development, irrigation, fishing, logging, mining, grazing, urbanization, and pollution, have caused the loss of 7 of 14 million salmon and steelhead annually (Federal Energy Regulatory Commission, 1987). The Council attributes the loss of 5 to 11 million anadromous fish to the development and operation of the 136 hydropower projects in the basin, and states that the majority of these losses are associated with mainstem Columbia River dams (Federal Energy Regulatory Commission, 1987).

The BPA, the Bureau of Reclamation, the Corps, the NMFS, the Forest Service, the states of Oregon, Washington, and Idaho, and numerous Indian tribes in the Columbia River Basin are spending millions of dollars annually to restore the anadromous fishery resource. Any increase in the production of salmon and steelhead above the Dalles dam will have to pass by the Dalles dam, both as juveniles and as adults, and could be subject to the impacts of the Dalles Dam North Fishway Hydroelectric Project. As a result, the proposed project could affect (1) the fishery resources of the Salmon River Basin of

Idaho; (2) the fishery improvements of the Bureau of Reclamation's Yakima River Basin Enhancement Project; (3) fishery improvements associated with the lower Snake River Compensation Plan and the Idaho Power Company Hells Canyon Complex settlement; (4) the efforts of the Grant County Public Utility District under the mid-Columbia settlement agreement; (5) the hatchery program of the Douglas County Public Utility District at Wells dam; (6) the fishway improvements at Tumwater and Dryden dams; and (7) additional fisheries mitigation programs of the Program. Thus, the construction and operation of the Dalles Dam North Fishway Hydroelectric Project could contribute to cumulative adverse impacts on the existing fishery resources of the Columbia River Basin and to future improvements in production resulting from the myriad fishery mitigative programs in the basin.

The staff believes that it would be contradictory to allow further development in the Columbia River Basin, if that development would negate the potential for success of these fishery improvement projects. Thus, the staff recommends that mitigative measures outlined in sections V.A.2. and 3. be included as conditions of any license issued for the project, and that the licensee be required to demonstrate, through postlicense monitoring, that the project would not contribute to cumulative adverse impacts on existing and future fishery resources in the Columbia River Basin.

B. Alternative of No Action

Implementing the no-action alternative would not alter the existing physical or biological components of the area, but would preclude the use of renewable water resources of the AWSS to generate electricity.

C. Recommended Alternative

The proposed project is the preferred alternative because electricity would be generated from a renewable resource, thus lessening the use of existing fossil-fueled, steam-electric plants, and because the environmental effects that would result from constructing and operating the project would not be major and would be adequately mitigated.

VI. FINDING OF NO SIGNIFICANT IMPACT

Construction of the proposed project would result in minor, short-term increases in turbidity levels in the Columbia River downstream from the north ladder. Operation of the project would result in the injury or mortality of some downstream migrating salmonid juveniles,

but recommended mitigative measures would reduce these losses to minor levels.

The project would not affect any federally listed threatened or endangered species nor any sites or structures listed on or eligible for listing on the National Register of Historic Places.

This environmental assessment was prepared in accordance with the National Environmental Policy Act of 1969. On the basis of the record and of the staff's independent environmental analysis, issuance of a license for the Dalles Dam North Fishway Hydroelectric Project would not constitute a major federal action significantly affecting the quality of the human environment.

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Washington Department of Ecology. 1982. Water quality standards for waters of the state of Washington. Chapter 173-2101 WAC. Olympia, Washington.

VIII. LIST OF PREPARERS

Robert Krska, EA Coordinator--Water and Fishery Resources (Fishery Biologist; M.S., Fisheries Sciences).

Alan D. Mitchnick--Threatened and Endangered Species (Wildlife Biologist; M.S., Wildlife and Fisheries Sciences).

Edwin Slatter--Cultural Resources (Archeologist; Ph.D., Anthropology).

John Mitchell--EA Editor (Writer-editor; B.S., Social Science).

Kenneth B. Fearon--Need for Power and Alternatives (Civil Engineer; BCE).

SAFETY AND DESIGN ASSESSMENT DALLES DAM NORTH FISHWAY HYDROELECTRIC PROJECT

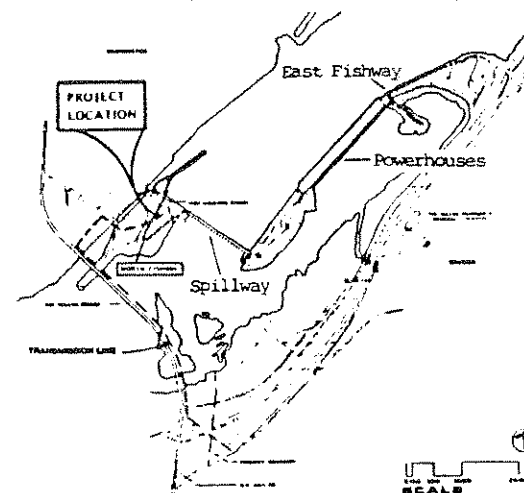
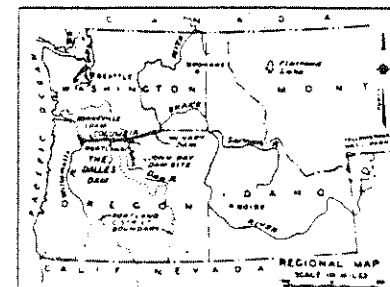


Figure 1. Project location for the proposed Dalles Dam North Fishway Hydroelectric Project, FERC No. 7076, Washington (Source: the staff, as modified from the Department of the Army, Portland and Walla Walla Districts, Corps of Engineers, 1984, and from Northern Wasco County People's Utility District, 1985, application, exhibit G).

A.4 Cultural & Historical Exemption



STATE OF WASHINGTON

DEPARTMENT OF ARCHAEOLOGY & HISTORIC PRESERVATION

1063 S. Capitol Way, Suite 106 • Olympia, Washington 98501
Mailing address: PO Box 48343 • Olympia, Washington 98504-8343
(360) 586-3065 • Fax Number (360) 586-3067 • Website: www.dahp.wa.gov

December 8, 2010

Mr. Jeffery Cueto
Low Impact Hydropower Institute
34 Providence Street
Portland, Maine 04113

Re: North Shore Hydroelectric Project Certification
Log No.: 120810-02-FERC

Dear Mr. Cueto:

Thank you for contacting our Department. We have reviewed the materials you provided for the proposed Wasco County PUD North Shore Hydroelectric Project Certification at the Dalles Dam, Klickitat County, Washington.

We concur with the proposed determination of No Historic Properties Affected.

We would appreciate receiving any correspondence or comments from concerned tribes or other parties that you receive as you consult under the requirements of 36CFR800.4(a)(4). In the event that archaeological or historic materials are discovered during project activities, work in the immediate vicinity must stop, the area secured, and the concerned tribe and this department notified.

These comments are based on the information available at the time of this review and on behalf of the State Historic Preservation Officer in compliance with the Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations 36CFR800.4. Should additional information become available, our assessment may be revised, including information regarding historic properties that have not yet been identified. Thank you for the opportunity to comment and a copy of these comments should be included in subsequent environmental documents.

Sincerely,

A handwritten signature in black ink, appearing to read "R. Whitlam", with a long horizontal line extending to the right.

Robert G. Whitlam, Ph.D.
State Archaeologist
(360)586-3080
email: rob.whitlam@dahp.wa.gov



DEPARTMENT OF ARCHAEOLOGY & HISTORIC PRESERVATION
Protect the Past, Shape the Future

A.5 Recreation Exemption

FEDERAL ENERGY REGULATORY COMMISSION
Washington, D. C. 20426

OFFICE OF ENERGY PROJECTS

Project No. 7076 - Oregon
Dalles Dam North Fishway Hydroelectric
Project
Northern Wasco County PUD

Mr. Robert Guidinger
Hydro Department Manager
Northern Wasco County PUD
2345 River Road
The Dalles, OR 97058-3551

May 27, 2015

Subject: Request For Exemption From Filing Form No. 80

Dear Mr. Guidinger:

This letter is in response your letter from dated April 2, 2015 requesting an exemption from further filing of the FERC Form No. 80 for the Dalles Dam North Fishway Hydroelectric Project (FERC No. 7076). You state that the project is located at the U.S. Army Corps of Engineers' Dalles Dam and that public access is prohibited at the site.

Upon review of the license and proceedings for this project I find that there is no existing or potential recreation within the current project boundary. Thus, in accordance with section 8.11(c) of the Commission's regulations, you are exempt from further filing of the FERC Form No. 80 for the Dalles Dam North Fishway Hydroelectric Project (FERC No. 7076) until further order from the Commission.

If you have any questions regarding this correspondence, please contact me at (202) 502-6156 or mark.ivy@ferc.gov.

Sincerely,

Mark I. Ivy, PhD.
Outdoor Recreation Planner
Division of Hydropower
Administration and Compliance