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LOW IMPACT HYDROPOWER QUESTIONNAIRE

E. LOW IMPACT HYDROPOWER QUESTIONNAIRE

Background Information

1. Name of the *Facility*

Northern Wasco County PUD Hydroelectric Plant

2. *Applicant's name, contact information*

Dwight Langer, Manager

2345 River Road

The Dalles, Oregon 97058

541-296-2226

3. *Location of Facility by river and state.*

Columbia River, Dallesport, Washington

4) *Installed capacity.*

5 MW

5) *Average annual generation.*

39K HWH

6) *Regulatory status.*

FERC license

7) *Reservoir volume and surface area measured at the high water mark in an average water year.*

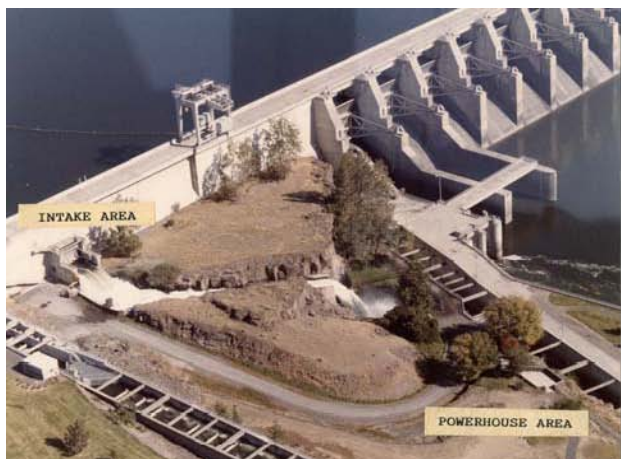
The PUD facility does not create a reservoir.

8) *Area occupied by non-reservoir facilities (e.g., dam, penstocks, powerhouse).*

Project related facilities consist of the dewatering structure and the powerhouse. Total surface area occupied by these two structures is less than 20,000 square feet. The photographs below show the area pre and post construction, from different angles.

Photo 1. Pre-construction view of the area.

Photo 2. Current view of the area.



In photo 1, the approximate locations of the intake structure and powerhouse are indicated. The auxiliary water for the fish ladder entrance flowed through a rock channel and plunged into a pool that was connected to the auxiliary water system.

Photo 2 is a current aerial view of the same area looking slightly toward the north, so the perspective is reversed. In this picture you can see the dewatering structure, the powerhouse roof, the intake area, and the old channel now mostly encased in concrete except for the plunge pool adjacent to the fish ladder.

9) Number of acres inundated by the Facility.

Zero, The Dalles Dam, built in 1957, created the reservoir behind it.

10) Number of acres contained in a 200-foot zone extending around entire impoundment.

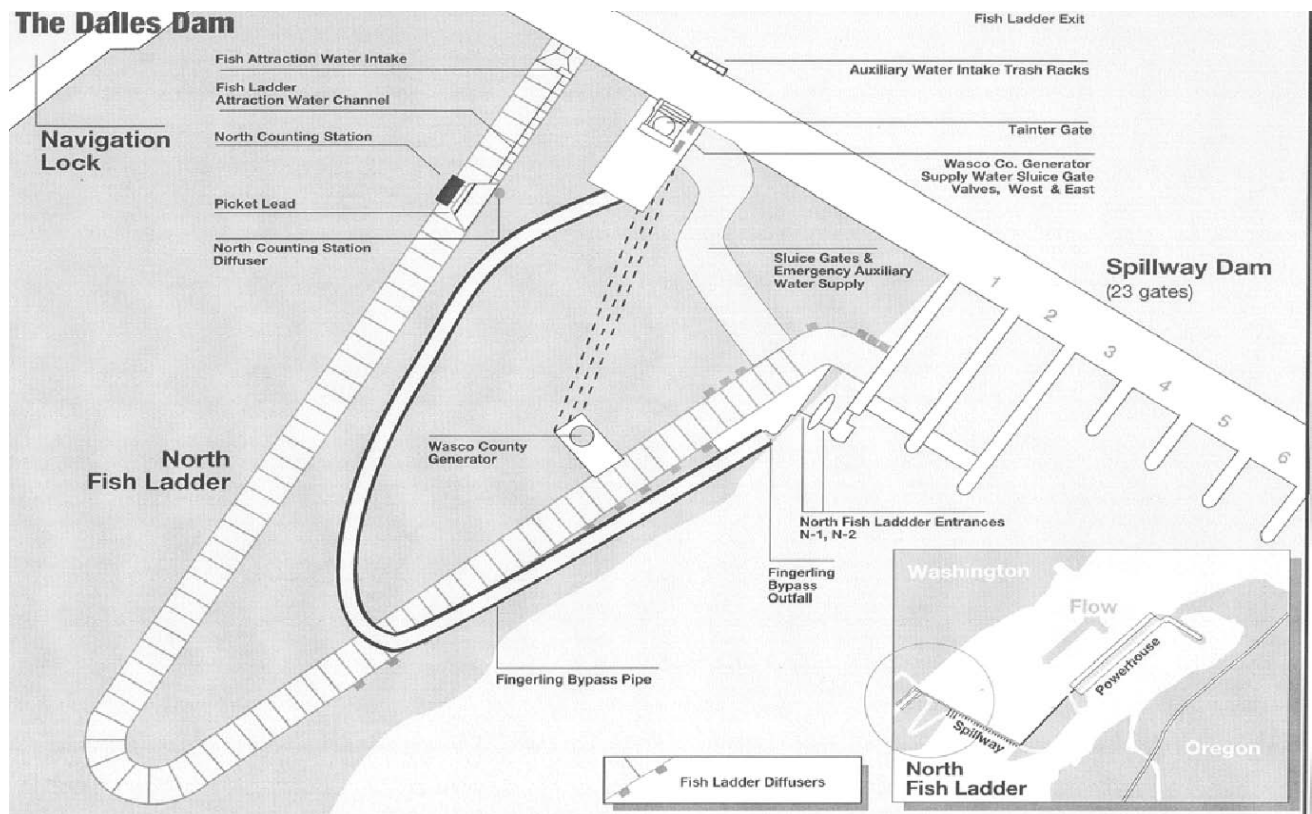
Again, this is zero.

11) Please attach a list of contacts in the relevant Resource Agencies and in non-governmental organizations that have been involved in recommending conditions for your Facility

Gary Fredricks, NMFS 503-231-6855, Gary.fredricks@noaa.gov Erich Gaedeke, FERC, 503-552-2716 Erich.Gaedeke@ferc.gov Tom Lorz, CRITFC, 503-235-4228 lort@critfc.org Bob Cordie, CoE, 541-298-7406 Robert.P.Cordie@usace.army.mil Scott Bettin, BPA, 503-230-4573 swbettin@bpa.gov David Willis, USFWS, 360-604-2500 David_wills@fws.gov

12) Please attach a description of the Facility, its mode of operation (i.e., peaking/run of river) and a map of the Facility.

Photo 3. Map of The Dalles Dam with an enlarged view of the PUD area.



Northern Wasco County PUD's North Shore Hydroelectric project at The Dalles Dam produced its first commercial power on 28 May, 1991. The 5 megawatt generator has produced 630,293 Mwh's of power since it started, which is enough to heat and light about 1000 average homes per year. Currently the power produced by The Dalles plant is being sold to Puget Sound Energy on a long term contract due to expire in 2011. When that contract expires, the PUD intends to market the power locally.

The PUD facility is located on the north shore of The Dalles Dam, technically in Washington State. The Dalles Dam is a 22 turbine federally owned "reregulating" hydro electric facility that impounds Lake Celilo, a 25 mile reservoir/lake. It was built in 1957, long before the PUD facility.

Adult fish ladders at these large dams are long and need auxiliary water to maintain adequate attraction flows, especially at the entrances. Prior to the construction of the PUD's hydro plant, the entrance of the north ladder at The Dalles Dam received about 800 cfs of auxiliary water from the forebay, through a rock channel. Water entering the system passed through a set of parallel bars spaced 7/8" apart called the "trash rack". This bar assembly kept adult fish and large debris from entering the auxiliary water system. However, juvenile fish small enough to pass through these bars would end up in the auxiliary water system.

The PUD saw an opportunity to harness the power of this 800 cfs to generate electricity. One of the conditions for construction was a requirement to separate the fish from the water that would power the turbine. Consequently a dewatering structure was designed that consisted of a diagonal wall screen (photo 6) that would separate the fish from most of the water. The fish free water would then power the turbine and the fish would proceed toward the end of the dewatering structure.



Photo 4. South side of the dewatering structure. The roof of the powerhouse is in the lower left corner of the picture.



Photo 5. North side of dewatering structure and the bypass pipe that conveys fish to the tailrace.

At the downstream end of the dewatering structure is an adjustable weir that maintains a depth of one foot at the discharge point (Photo7). The water and the fish plunge into a catch basin at the end of the dewatering structure.

Connected to the catch basin is a 24” diameter pipe that conveys the juvenile fish to the tailrace. This route is much safer for these active migrants than the previous route.



Photo 6. Interior view of the dewatering structure looking downstream. The diagonal wall screen is on the right.



Photo 7. Weir discharge plunging into concrete basin.



Photo 8. Wall screen and brush.

The PUD’s intake/dewatering structure improves juvenile fish passage condition by diverting them away from the auxiliary water system. Before construction fish would end up under the grating on the floor of the fish ladder. The openings in the grating are about 1” x 3” and water velocities are significant. It is likely that fish would get injured or killed trying to get past this barrier.

Questions for “New” Facilities Only: 13-18 this is not a new facility so these questions were skipped.

A. FLOWS

Is the Facility in Compliance with Resource Agency Recommendations issued after December 31, 1986 regarding flow conditions for fish and wildlife protection, mitigation and enhancement?

The PUD conducts an annual monitoring program to evaluate fish passage conditions as required by the FERC license. A copy of the report is in the appendix. Results are summarized and distributed to permit issuing agencies and interested parties. As stated before, the PUD facility did not change the volume or manner in which the auxiliary water is drawn from the forebay. Consequently it is reasonable to say that the PUD has not negatively impacted or altered flow conditions for fish and wildlife. Further, the PUD has enhanced conditions by providing a passage route away from the auxiliary water system and conveying fish directly to the tailrace.

B. WATER QUALITY

1) *Is the facility either:*

a) *In Compliance with all conditions issued pursuant to a Clean Water Act Section 401 water quality certification issued for the Facility after December 31, 1986? Or*

Yes, the PUD is in compliance with all conditions of the Clean Water Act Section 401. The Columbia River below The Dalles Dam may violate aspects of the Clean Water Act, such as temperature and total dissolved gas levels, but with less than 0.5% of the river flow passing through the PUD turbine, it could not reasonably be responsible for these violations.

We don't have any current confirmation of that assertion but when the facility was built an Environmental Assessment (EA) was prepared that included a section on water quality. Additionally, it was requested that the PUD prepare a Soil Erosion and Sediment Control Plan, an Oil Spill, Prevention, Containment, and Counter Measure Plan, and that they secure a temporary modification to the water quality criteria of the Columbia River during the construction period from the Washington Department of Ecology.

The EA discusses at length a variety of topics including resource development, (is the power needed), the project specifics and alternatives, mitigative measures, water resources, environmental impacts and recommendations, fishery resources (what species are present), the larger Columbia Basin Restoration Effort, turbidity and sedimentation, and operation of the AWS. In typical legalese, the FERC concluded at the end of the EA the following:

The Environmental Assessment (EA) by the Federal Energy Regulatory Commission, dated November 16, 1987, concluded that "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."

The Soil Erosion and Sediment Control Plan, and the Temporary Modification of the Water Quality Criteria addressed the water quality concerns during construction. Letters documenting the approval of these plans are attached. We can only assume that the plans were followed. The Oil Spill Prevention, Containment, and Counter Measure Plan was most likely also related to potential spills related to construction but no documentation of this plan could be found. There was a Spill, Prevention Control and Countermeasure Plan prepared and implemented in March of 2003. That plan is still in effect and a copy of it is attached.

The permanent water quality measures stipulated in the Soil Erosion and Sediment Control Plan that were implemented include the following:

- **reseed effected areas to control erosion**
- **direct internal drainage water through an oil separator before draining back to the river.**
- **operate the project to prevent flow outside of the intake structure**
- **provide for emergency shutoff of intake water in the event of any structural or fish bypass system failure, this is accomplished with the radial gate at the upstream end of the dewatering structure.**

In addition to an oil separator for the internal drainage, the PUD uses an oil sensor in the project sump. After passing through the oil separator, the cooling water drains into the project sump. If there is any oil in the water in the sump, operators are alerted by an alarm. From the sump the water is pumped to the tailrace.

The FERC environmental assessment, the CH2M Hill Soil Erosion and Sediment Control Plan, the FERC approval letter, the Washington State Department of Ecology temporary modification of the water quality standards letter, and the Spill Prevention Control and Countermeasure Plan are all included as PDF attachments.

b) Is the Facility area or the downstream reach currently identified by the state as not meeting water quality standards (including narrative and numeric criteria and designated uses) pursuant to Section 303(d) of the Clean Water Act?

C. FISH PASSAGE AND PROTECTION

1) Is the Facility in Compliance with Mandatory Fish Passage Prescriptions for upstream and downstream passage of anadromous and catadromous fish issued by Resource Agencies after December 31, 1986?

Yes

Downstream Passage: the PUD maintains a screened bypass system to convey fish safely around the turbine for downstream migrants. The condition of the screened bypass is monitored by sampling fish that have passed through it and evaluating their condition. This is done for one 24 hour period once a week from April through July.

Upstream Passage: the PUD uses the water that augments the north fish ladder entrance. The CoE must maintain certain elevations and differentials at this entrance, referred to as criteria. Since the PUD took over the management of the auxiliary water and this entrance, criteria violations have decreased.

5) Is the Facility in Compliance with Mandatory Fish Passage Prescriptions for upstream and/or downstream passage of Riverine Fish?

Yes.

The bypass systems for both upstream and downstream passage work equally well for all fish.

6) Is the Facility in Compliance with Resource Agency Recommendations for Riverine, anadromous and catadromous fish entrainment protection, such as tailrace barriers?

The PUD bypass pipe discharges into the tailrace of the dam and from there they have to navigate any tailrace barriers as any run of the river fish would have to do. The Corps of Engineers is responsible for entrainment protection downstream of their project for all fish.

D. WATERSHED PROTECTION

1) Is there a buffer zone dedicated for conservation purposes (to protect fish and wildlife habitat, water quality, aesthetics and/or low-impact recreation) extending 200 feet from the high water mark in an average water year around 50 - 100% of the impoundment, and for all of the undeveloped shoreline

Since the PUD is not responsible for any impoundment they are not responsible for maintaining a buffer zone of any kind.

E. THREATENED AND ENDANGERED SPECIES PROTECTION

Are threatened or endangered species listed under state or federal Endangered Species Acts present in the Facility area and/or downstream reach?

YES

- 2) If a recovery plan has been adopted for the threatened or endangered species pursuant to Section 4(f) of the Endangered Species Act or similar state provision, is the Facility in Compliance with all recommendations in the plan relevant to the Facility?

YES

- 3) *If the Facility has received authority to incidentally Take a listed species through: (i) Having a relevant agency complete consultation pursuant to ESA Section 7 resulting in a biological opinion, a habitat recovery plan, and/or (if needed) an incidental Take statement; (ii) Obtaining an incidental Take permit pursuant to ESA Section 10; or (iii) For species listed by a state and not by the federal government, obtaining authority pursuant to similar state procedures; is the Facility in Compliance with conditions pursuant to that authority?*

YES

Through 2006, the PUD secured a Section 10 incidental take permit. The PUD complied with all requirements and successfully renewed the permit on an annual basis.

In 2007, the PUD, in conjunction with FERC, and at the request of NOAA Fisheries, acted as the non federal entity in the preparation of a biological assessment pursuant to the issuance of a Biological Opinion for the annual sampling program. The biological assessment was completed and submitted to NOAA fisheries in October of 2007. We continue to wait for the issuance of the Biological Opinion for the project and sample each year under the informal written authority issued by NOAA Fisheries (attached).

Conversations with NOAA Fisheries confirm that the Biological Opinion is forthcoming and is simply delayed due to work load.

- 4) *If a biological opinion applicable to the Facility for the threatened or endangered species has been issued, can the Applicant demonstrate that? a) The biological opinion was accompanied by a FERC license or exemption or a habitat conservation plan? Or*

NOAA Fisheries and FERC representatives confirm that when the Biological Opinion is issued, the FERC license will be modified to include the BiOp.

The biological opinion was issued pursuant to or consistent with a recovery plan for the endangered or threatened species? Or

b) There is no recovery plan for the threatened or endangered species under active development by the relevant Resource Agency? Or

- c) The recovery plan under active development will have no material effect on the Facility's operations?

Any threatened or endangered species passing through this project are covered by the larger recovery plan in place on the Columbia River for the numerous listed species in this river system. Further development and changes to the recovery plan are not likely to have any effect on the operation of the PUD's hydro plant, given the small scale of the PUD relative to The Dalles Dam.

F. CULTURAL RESOURCES PROTECTION

- 1) If FERC-regulated, is the Facility in Compliance with all requirements regarding Cultural Resource protection, mitigation or enhancement included in the FERC license or exemption?

Yes. The EA looked at cultural resource protection and concluded: “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).

G. RECREATION

- 1) If FERC-regulated, is the Facility in Compliance with the recreational access, accommodation including recreational flow releases) and facilities conditions in its FERC license or exemption?

There was never any recreational component to the construction area since it is inside the Corps of Engineers property and not accessible to the general public. The intake is in the Boat Restricted Zone in the forebay so there is no access to the water immediately above the intake area. The recreational areas above and below The Dalles dam are not affected by the tiny percentage of flow that passes through the PUD.

H. Facilities Recommended for Removal

- 1) *Is there a Resource Agency Recommendation for removal of the dam associated with the Facility?*

NO