STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
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September 15, 2011

Ms. Kim Nguyen
Civil Engineer
OEP/DHL/Northwest Branch
Federal Energy Regulatory Commission
888 1st Street NE
Washington, DC 20426

Dear Ms. Nguyen,

Attached is a Draft 401 Water Quality Certification for the Wells Hydroelectric Project (FERC No. 2149), owned and operated by the Public Utility District No. 1 of Douglas County, Washington. This Draft was released for public comment on August 30, 2011.

Sincerely,

Charles McKinney

Charles McKinney
Section Manager
Water Quality Program

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

IN THE MATTER OF GRANTING A WATER QUALITY CERTIFICATION to: Public Utility District No. 1 of Douglas County, Washington in accordance with 33 USC 1341 (FWPCA section 401), RCW 90.48.260 and WAC 173.201A	**ORDER NO. _____** Relicensing of the Wells Hydroelectric Project (FERC No. 2149) on the Columbia River, Douglas County, Washington

TO: Mr. William Dobbins, General Manager
Public Utility District No. 1 of Douglas County
1151 Valley Mall Parkway
East Wenatchee, WA 98802-4497

On May 27, 2010, Public Utility District No. 1 of Douglas County, Washington (Douglas PUD) filed an application for a new license with the Federal Energy Regulatory Commission (FERC) for the Wells Hydroelectric Project (Project), FERC License No. 2149. On September 30, 2010, Washington State Department of Ecology (Ecology) received an application for a 401 certification from Douglas PUD, requested pursuant to the provisions of 33 USC §1341 (§401 of the Clean Water Act). This document is a response to that request, issued as an order, under the authority of RCW 90.48.

1.0 NATURE OF THE PROJECT

The Wells Dam is located on the Columbia River at river mile (RM) 515.6, near the town of Pateros, Washington. It is 30 river miles downstream of Chief Joseph Dam, owned and operated by the Army Corps of Engineers, and 42 river miles upstream of the Rocky Reach Hydroelectric Project, owned and operated by Chelan County Public Utility District. The Wells Reservoir is approximately 30 miles long. The Methow and Okanogan rivers are tributaries. The Wells Project boundary extends approximately 1.5 miles up the Methow River and approximately 15.5 miles up the Okanogan. The normal maximum surface area of the reservoir is 9,740 acres.

The Wells Dam has ten generating units with a total generator nameplate capacity of 774,300 kilowatts. The generating units, spillways and downstream (juvenile) fish passage facilities are combined into a single structure referred to as the hydrocombine. The hydrocombine is approximately 1,130 feet long, with a crest height of 795 feet. Upstream fish passage is via the two fish ladders, one on each side of the dam. The Wells Project operates under various river flow coordination agreements established by the mid-Columbia utilities and government agencies for the purpose of optimizing the use of the Columbia River for hydropower.

As part of the FERC re-licensing effort, Douglas PUD preformed studies of various aquatic resources, and in collaboration with federal and state resource agencies and tribes, developed management plans to protect these resources. These plans have been incorporated into an Aquatic Settlement Agreement (ASA), and include the following: 1) Water Quality Management Plan; 2) White Sturgeon Management

Plan; 3) Bull Trout Management Plan; 4) Pacific Lamprey Management Plan; 5) Resident Fish Management Plan; and 6) Aquatic Nuisance Species Management Plan. The ASA also established an Aquatic Settlement Workgroup (ASWG) which is intended to be the primary forum for consultation and coordination of the implementation of the measures in the six Aquatic Resource Management Plans.

2.0 AUTHORITIES

In exercising authority under Section 401 of the Clean Water Act (33 USC 1341) and Revised Code of Washington (RCW) 90.48.260, Ecology has investigated this proposal for:

1) Conformance with all applicable water quality based, technology based, toxic or pretreatment effluent limitations as provided under 33 USC 1311, 1312, 1313, 1316, and 1317 (Federal Water Pollution Control Act Sections 301, 302, 303, 306 and 307).
2) Conformance with the state water quality standards as provided for in Chapter 173-201A WAC and by Chapter 90.48 RCW, and with other appropriate requirements of state law; and,
3) Conformance with all known, available and reasonable methods to prevent and control pollution of state waters as required by RCW 90.48.010.

3.0 CURRENT STANDARDS

1) Washington State Water Pollution Control Act

This Certification supports the goals of the State of Washington Water Pollution Control Act (Chapter RCW 90.48). This Certification describes a program to effectively monitor and evaluate conditions and progress toward achieving biological goals and water quality requirements to improve conditions for fish and water quality over existing conditions.

2) Designated Uses

Waters of the State are assigned designated uses under WAC 173-201A. Designated uses for this section of the Columbia River include, but are not limited to:

- Aquatic life uses: salmonid spawning, rearing, migration
- Recreational uses: primary contact
- Water supply uses: domestic, industrial, agricultural, stock water
- Miscellaneous uses, consisting of wildlife habitat, harvesting, commerce and navigation, boating and aesthetics.

3) Numeric Criteria and 303(d) list/TMDLs

Numeric criteria for the above designated uses are also found at WAC 173-201A. These include criteria for total dissolved gas (TDG), pH, dissolved oxygen (DO) and temperature.

a) Total Dissolved Gas (TDG). The Water Quality numeric criteria require that TDG shall not exceed 110 percent. There are several exemptions to this standard. The first is that

the water quality criteria for TDG do not apply when the stream flow exceeds the seven-day, ten-year frequency flood stage (7Q10). The 7Q10 flood flow is the highest seven consecutive day average flow with a 10-year recurrence frequency. The 7Q10 flood flow was calculated to be 246 thousand cubic feet per second (kcfs) for Wells dam.

A second special exemption exists during fish passage on this section of the Columbia River. When spilling water at dams is necessary to aid fish passage, and the operator has a gas abatement plan (GAP) approved by Ecology, the following special standards apply:

- TDG must not exceed an average of 120% as measured in the tailraces of each dam. These averages are based on the twelve highest consecutive (12C-High) hourly readings in any one day of TDG.
- TDG must not exceed a maximum hourly average of 125%, relative to atmospheric pressure, in the tailrace during spillage for fish passage.
- TDG must not exceed an average of 115% as measured in the forebay of the next downstream dam. These averages are based on the twelve highest consecutive (12C-High) hourly readings of TDG in any one day.

TDG TMDL. Ecology, with the United State Environmental Protection Agency (EPA), issued a Total Maximum Daily Load (TMDL) for TDG in the mainstem Columbia River from the Canadian border to the Snake River confluence (Ecology 2004). The TMDL sets TDG allocations for each dam. The load allocation for the Wells Project during fish passage is 120% (12C-High). During non-fish spill, the allocation is 74 mm Hg above saturation, applied to the Project's spill water. However, during non-fish spill, if forebay levels exceed 74 mm Hg, then i) for maximum instantaneous levels, the standard only applies to the TDG generated by the Project's spill; and ii) tailrace and downstream levels shall not exceed the forebay level.

b) Temperature. The Water Quality numeric criteria for the Columbia River from the Washington-Oregon border to Grand Coulee Dam (i.e., incorporating the Wells project) require that water temperature not exceed 17.5°C. When natural conditions exceed these criteria, water temperatures caused by human activities shall not increase by more than 0.3ºC due to a single source. The standard for the lower Okanogan and Methow rivers is the same, except that in the Methow, from October 1 to June 15, the criterion is 13°C.

303(d) List. Portions of the Columbia River within the Project boundary are currently classified as impaired for temperature under Section 303(d) of the Clean Water Act. A TMDL for temperature is expected to be developed by EPA that will establish a load allocation for the project.

c) Dissolved oxygen (DO) and pH. Numeric criteria for the designated uses for this section of the Columbia River require that DO exceed 8.0 milligrams per liter (mg/L) with a maximum human-caused decrease of 0.2 mg/l. pH must be within the range of 6.5 to 8.5, with a human-caused variation within this range of less than 0.5 units. The

standard for DO and pH for the Methow and the Okanogan rivers in their lower reaches is the same as for the Columbia River.

d) Turbidity. Numeric criteria for the uses in this section of the Columbia River, and the lower Methow and the Okanogan rivers, require that turbidity shall not exceed 10 nephelometric turbidity units (NTUs) over background turbidity when the background turbidity is 50 NTU or less, or have more than a 20 percent increase in turbidity when the background turbidity is more than 50 NTU.

e) Toxic Substances. Toxic substances shall not be introduced above natural background levels in waters of the state which have the potential either singularly or cumulatively to adversely affect characteristic uses, cause acute or chronic toxicity to the most sensitive biota dependent upon those waters, or adversely affect public health, as determined by Ecology (WAC 173-201A-240).

In the Okanogan River, including the lowermost portion, which is included within the Project boundary, two toxic substances are of concern: dichloro-diphenyl-trichloroethane (DDT) and poly- chlorinated biphenyls (PCBs). In 2004, Ecology completed the Lower Okanogan River DDT and PCB TMDL, subsequently approved by EPA.

4) Antidegradation

Existing and designated uses must be maintained and protected in accordance with WAC 173-201A.

5) Water Quality Attainment Plan (WQAP)

For dams that cause or contribute to a violation of water quality standards, the dam owner is required to provide a detailed strategy for achieving compliance with state water quality standards (WAC 173-201A-510(5)).

6) Spills. RCW Chapters 90.48 and 90.56 require certain oil spill prevention and control measures.

7) Aquatic Nuisance Species. State law defines "aquatic nuisance species" as a "nonnative aquatic plant or animal species that threatens the diversity or abundance of native species, the ecological stability of infested waters, or commercial, agricultural, or recreational activities dependent on such waters". Prevention programs are implemented through cooperative agreements among state agencies and representatives of industry (RCW 77.160.)

4.0 FINDINGS ON AQUATIC LIFE USES

Below are some findings relevant to the conditions in this Certification. This Certification requires Douglas PUD to continue to meet the requirements in these two plans:

1) **Listed Anadromous Salmonids**. In 2002, Douglas PUD entered into a 50-year Anadromous Fish Agreement and Habitat Conservation Plan (Wells HCP) to resolve all Project-related impacts to ESA-listed anadromous salmonids. The Wells HCP contains measures to addresses all Project-related impacts to spring and summer/fall Chinook, steelhead, sockeye and Coho (Plan Species). The signatory parties include the National Marine Fisheries Service (NMFS), United States Fish and Wildlife Service (USFWS), the Confederated Tribes of the Colville Reservation (Colvilles), Washington State Department of Fish and Wildlife (WDFW), Douglas PUD, and the Wells Project power purchasers. FERC approved the HCP on June 21, 2004, and it became part of the Wells Project license. The Confederated Tribes and Bands of the Yakama Nation (Yakamas) signed the HCP in 2005.

2) **Aquatic Settlement Agreement** (ASA). As part of the FERC re-licensing effort, Douglas PUD performed studies of various aquatic resources, in collaboration with federal and state fish management agencies and tribes, and developed management plans to protect these resources. The purpose was to resolve all remaining aquatic resource issues related to compliance with all federal and state laws applicable to issuance of a new operating FERC license for the project. The ASA was sent out for signing on October 21, 2008. It was signed by Douglas PUD, Ecology, WDFW, USFWS, the Colvilles and Yakamas by July 31, 2009. Below is a summary of the information collected and provided in the five Aquatic Resource Management Plans that focused on aquatic life (the next section, 5.0, addresses numeric criteria).

   a) White Sturgeon. White sturgeon (*Acipenser transmontanus*) are the largest of all North American freshwater fish, with lengths up to 20 feet. White sturgeon are a long-lived fish, with fin ray analysis documenting fish over 100 years in age. Historically, these anadromous fish migrated throughout the mainstem Columbia River from the estuary to the headwaters. Columbia River white sturgeon are reported to have declined in numbers because of numerous factors, including obstruction of migration by mainstem hydroelectric dams, altered stream flows, hydrologic and temperature regimes, reduced spawning habitat, and over-harvest.

   b) Bull Trout. On June 10, 1998, USFWS listed bull trout within the Columbia River basin as threatened under the Endangered Species Act (ESA) (FR 63(111)).

   c) Pacific Lamprey. Pacific lamprey (*Lampetra tridentata*) are an important component of the Columbia River Basin Native American tribal culture and ecosystem. Native Americans have historically and currently harvest lamprey for subsistence, ceremonial and medicinal purposes. Ecologically, lamprey serve as filter feeders in their juvenile phase, adults bring back marine-derived nutrients to Columbia River's freshwater tributaries, and all life stages are important prey items.

      Pacific lamprey use most tributaries and the mainstem of the Columbia River. Historically, this anadromous fish migrated beyond Chief Joseph Dam on the Columbia River. Within the mid-Columbia River system, they are known to occur in the Okanogan, Methow, Entiat and Wenatchee Rivers.

      Decline of Columbia River Pacific lamprey abundance has been observed through Traditional Ecological Knowledge sources and fish counts at the Columbia River dams.

1950-1970 counts were considerably higher than they have been the past two decades. Because of diminished adult returns, only very limited harvest has been allowed in recent years.

d) Resident Fish. Resident, non-recreational species make up the bulk of the fish in the Wells Reservoir. Many of these species are native to the Wells Reservoir, include burbot, chiselmouth and peamouth chub, redside shiner, largescale sucker, bridgelip sucker, longnose sucker, lake whitefish, prickly sculpin, threespine stickleback and dace species (*Rhinichthys spp*.) Currently, no management actions, other than monitoring, or active fisheries for these species occur.

e) Aquatic Nuisance Species Macrophytes were present at 224 of 396 sites sampled in the Wells Reservoir during a 2005 aquatic macrophyte study. Of the 396 samples sites, the nuisance species, Eurasian water milfoil (EWM), was found to be the dominant species (greater than 60%) at 6.3% of the sample locations. No invasive macroinvertebrates (e.g., zebra or quagga mussels) were observed.

5.0 FINDINGS ON WATER QUALITY NUMERIC CRITERIA

1) Total Dissolved Gas (TDG)

TDG levels associated with the Project have occasionally been measured above the numeric criteria. The levels of TDG that result in exceedances are most likely to occur during April through August as a result of high TDG levels coming into the Project from upstream, or unit outages. Similar to other hydroelectric facilities on the Columbia River system, probabilities for exceedances are higher during late spring periods of high river flow and low electrical demand.

Three studies were performed to evaluate the ability of the Wells Project to meet TDG numeric criteria. The first two were field studies, the third was an unsteady-state three-dimensional two-phase numerical model. The model allowed the PUD to observed predicted movement of water through the gates and downstream and how the gas bubbles moved within the water; and to more narrowly focus on specific combinations of gates to reduce TDG in both the near and far field. According to the model, concentrated spill operations reduce the TDG production and increase the degasification at the free surface. A “Play book” was created that identified a specific set of gate openings to minimize TDG production and thereby meet TDG numeric criteria. According to the model, assuming incoming TDG is equal to or less than 115% (the regulatory standard for the upstream dam) and one turbine is down (a conservative estimate), and if the dam is operated in compliance with the “Play book”, levels in the tailrace will remain below 119% (120% is the regulatory limit), and values in the downstream forebay will remain below 115% (another regulatory limit) (Politano 2009). This is included as part of the annual Gas Abatement Plan (GAP), required in the state water quality standards.

In 2011, Columbia River flows at Wells Dam have been the third-highest on record. A PUD mid-season analysis has shown that spill season started and peaked early and total river flow past Wells has been almost twice the long-term historic average. Two of the ten turbines were

down due to mechanical problems. The 125% hourly standard for the tailrace was exceeded on 19 out of 126 days when flows exceeding the 7Q10 flood flow are discounted. However, for each of those 19 days, the average incoming TDG in the Wells forebay exceeded 115%. Of the 75 days when forebay 12C-High TDG was below 115% and flows were below 7Q10, the highest hourly average exceeded 125% on one day, and that was most likely due to a sensor malfunction. Results for the 120% 12C-High standard for the tailrace were very similar.

The 115% 12C-High standard for the downstream forebay (at Rocky Reach dam) was exceeded 41 out of 126 days when 7Q10 flows are discounted. The Wells forebay exceeded 115% due to incoming TDG on 35 of those 41 days.

2) Water Temperature

a) Reservoir and tributaries. The 7-DAD Max temperature data recorded since 2001 indicate that the portion of the Columbia River upstream of and within the Project generally warms to above 17.5°C (see WQS numeric criteria) in mid-July and drops below the numeric criterion by early October. Temperatures in the Methow River upstream of the project warm to above 17.5°C in mid-July and drop below the numeric criteria by September, while trends in the Okanogan River upstream of the project indicate warming above 17.5°C from early June with cooling by late September.

To assess compliance with the State temperature standards, two 2- dimensional laterally-averaged temperature models (using CE-QUAL-W2) were developed that represent existing (or "with Project") conditions and "without Project" conditions of the Wells Project, including the Columbia River from the Chief Joseph Dam tailrace to Wells Dam, the lowest 15.5 miles of the Okanogan River, and the lowest 1.5 miles of the Methow River. The results were processed to develop daily values of the seven-day average of the daily maximum temperatures (7-DADMax), and then compared for the two conditions.

The model analyses demonstrated that "with Project" temperatures in the Columbia, Okanogan and Methow rivers do not increase more than 0.3°C compared to ambient ("without Project") conditions anywhere in the reservoir, and that the Project complies with state water quality standards for temperature (West 2008).

However, a full evaluation of potential temperature impacts of hydroelectric power generation on the Columbia River will most likely require analysis of hydraulic and temperature conditions on a system-wide basis. Hydraulic and temperature influences from upstream dams may currently mask project-related impacts. The only way to properly understand these impacts is to examine the river more comprehensively through perhaps a system-wide TMDL study such as that which is under consideration or development by EPA.

b) Fish Ladders. Wells Dam has two fish ladders, one at each end of the dam. NMFS requires monitoring of the ladders every two hours May 1 to November 15 and to discontinue trapping when temperatures exceed 20.6°C. In 2001 and 2003, supplemental temperature recording equipment was added to the east ladder. No exceedances were recorded in 2001 but 2003 exceedances were recorded on three hourly occasions.

3) Dissolved Oxygen and pH.

The Wells project has limited ability to influence DO and pH levels due to the limited storage capacity, high rate of discharge through the reservoir, and a turbulent discharge that tends to increase rather than decrease DO downstream. The great majority of all monitoring found that DO and pH levels were within applicable criteria. Sensors added to existing Wells forebay TDG monitoring equipment for three years (2005-2007) showed that a) pH values were within the range between 6.5 and 8.5, but with swings within this range and b) there were periodic excursions of DO below the numeric criteria in August and September, although faulty sensor readings were suspected. A year-long limnology study begun in May, 2005 found that all DO readings from the reservoir were above 8.0 mg/l and in compliance with the WQS numeric criteria.

A third study, proposed by the Aquatic Resource Workgroup, was carried out in 2007 to collect additional DO, pH and turbidity data. It found that DO concentrations in the forebay remained well above minimum numeric criteria, excluding an instrument-related malfunction observed in early October (Parametrix, Inc. 2009).

4) Turbidity. The only turbidity reading over 5.0 NTU was in the Methow River during May where turbidity was 5.6 NTU. This is expected to be related to the high runoff flows that occur at that time.

5) Toxics. Based on concerns that Project operations might be contributing to the accumulation of DDT and PCB-laden sediment that could impact aquatic life, in 2006 Douglas PUD conducted an analysis to assess sediment accumulation within the Project portion of the Okanogan River (lower 15.5 miles). Douglas contracted with Erlandsen Associates to collect bathymetric information at nine river transects. Bathymetric data on these same nine transects had been collected by Bechtel Corporation in 1997. A comparison of the data indicated that sediment is not accumulating in the Project portion of the Okanogan River (Erlandsen 2006). It was concluded that with regard to sediment loading, the Okanogan River is exhibiting natural riverine processes and is not affected by Project operations**.**

6) Spills. Douglas PUD operates the project in accordance with an Oil Spill Prevention and Control Plan. This plan was updated, in accordance with the ASA, in early 2009 (Jacobs 2009).

6.0 WATER QUALITY CERTIFICATION CONDITIONS

In view of the foregoing and in accordance with Section 401 of the Clean Water Act (33 USC 1341), RCW 90.48.260 and Chapter 173-201A, Ecology finds reasonable assurance that the proposed license will comply with state and federal water quality standards and other appropriate requirements of state law provided the following conditions are met. Implementation of the compliance schedule and adaptive management strategy contained in the proposed license will result in the attainment and compliance with state and federal water quality standards and other appropriate requirements of state law provided the following conditions are met. Accordingly, through this Order issued and enforceable under RCW 90.48, Ecology grants Section 401 Water Quality Certification to the Licensee, Douglas County Public Utility

District No. 1 for the Wells hydroelectric project, (FERC No. 2149) subject to the following conditions. This Order will hereafter be referred to as the "Certification".

6.1 General Conditions

1) The Project shall comply with all water quality standards (currently codified in WAC 173-201A), ground water standards (currently codified in WAC 173-200), and sediment quality standards (currently codified in WAC 173-204) and other appropriate requirements of state law that are related to compliance with such standards. The conditions in Sections 6.2 and 6.3 provide reasonable assurance that the Project will protect and maintain designated uses and therefore will meet the state's antidegradation standards. Further, the conditions in Section 6.4 provide a detailed strategy to achieve compliance with state water quality standards and, for purposes of this Certification, constitute a water quality attainment plan under WAC 173-201A.

2) In the event of changes in or amendments to the state water quality, ground water, or sediment standards or changes in or amendments to the state Water Pollution Control Act (RCW 90.48) or changes in or amendments to the Federal Clean Water Act, such provisions, standards, criteria or requirements shall apply to the Project and any attendant agreements, orders, or permits, to the fullest extent permitted by law.

3) Discharge of any solid or liquid waste to the waters of the State of Washington without prior approval from Ecology is prohibited.

4) Douglas PUD shall consult with Ecology before it undertakes any change to the Project or Project operations that might significantly and adversely affect compliance with any applicable water quality standard (including designated uses) or other appropriate requirement of state law. If, following such consultation, Ecology determines that such change would violate state water quality standards or other appropriate requirements of state law, Ecology reserves the right to condition or deny such Project change. Ecology will respect the dispute resolution process contained in the Aquatic Settlement Agreement.

5) This Certification does not exempt compliance with other statutes and codes administered by federal, state and local agencies.

6) Any provisions of this Certification that incorporate the substantive obligations of the ASA shall continue to apply even if the ASA ceases to exist, or if FERC fails to fully incorporate any provisions of the ASA in the Project license, unless otherwise ordered by Ecology. However, if a conflict or inconsistency exists or arises between this Certification and the ASA or any part thereof that is incorporated in this Certification, the terms of this Certification shall govern, unless Ecology directs otherwise.

7) Ecology retains the right to modify schedules and deadlines provided under this Certification or provisions of the Management Plans that it incorporates.

8) Ecology retains the right to require additional monitoring, studies, or measures if it determines that there is a likelihood or probability that violations of water quality standards

or other appropriate requirements of state law have or may occur, or insufficient information exists to make such a determination.

9) Ecology reserves the right to amend this Certification by Administrative Order if it determines that the provisions hereof are no longer adequate to provide reasonable assurance to provide reasonable assurance of compliance with applicable water quality standards or other appropriate requirements of state law. Such determination shall be based upon provisions in the new FERC license or new information or changes in: (i) the construction or operation of the Project; (ii) characteristics of the water; (iii) water quality criteria or standards; (iv) Total Maximum Daily Load (TMDL) requirements; (v) effluent limitations; or (vi) other applicable requirement of state law. Amendments of this Certification shall take effect immediately upon issuance, unless otherwise provided in the order.

10) Ecology reserves the right to issue administrative orders, assess or seek penalties under state or federal law, and to initiate legal actions in any court or forum of competent jurisdiction for the purposes of enforcing the requirements of this Certification or applicable state or federal laws.

11) The conditions of this Certification should not be construed to prevent or prohibit Douglas PUD from either voluntarily or in response to legal requirements imposed by a court, the FERC, or any other body with competent jurisdiction, taking actions which will provide a greater level of protection, mitigation or enhancement of water quality or of existing or designated uses.

12) If five or more years elapse between the date that this Certification is issued and the date of issuance of the New License for the Project, this Certification shall be deemed to have been denied at such time and Douglas PUD shall send Ecology an updated 401 application that reflects then current conditions, regulations and technologies. This provision should not be construed to otherwise limit the reserved authority of Ecology to deny, amend or correct the Certification before or after the issuance of the New License.

13) All documents required under this Certification to be submitted to Ecology shall be submitted to Washington State Department of Ecology, Central Regional Office, Water Quality Program, Section Manager.

14) Copies of this Certification and associated permits, licenses, approvals and other documents shall be kept on site and made readily available for reference by Douglas PUD, its contractors and consultants, and by Ecology.

15) Douglas PUD shall allow Ecology access to inspect the Project and Project records required by this Certification for the purpose of monitoring compliance with the conditions of this Certification. Access will occur after reasonable notice, except in emergency circumstances.

16) Douglas PUD shall, upon request by Ecology, fully respond to all reasonable requests for materials to assist Ecology in making determinations under this Certification and any resulting rulemaking or other process.

17) If an action required under or pursuant to this Certification requires as a matter of federal law that the FERC approve the action before it may be undertaken, Douglas PUD shall not be considered in violation of such requirements to the extent that FERC refuses to provide such approval, provided that Douglas PUD diligently seeks such approval and so notifies Ecology.

18) The reservations contained in this Certification do not preclude or limit any right of Douglas PUD to contest the validity of any such reservation in connection with any order or any other action taken by Ecology pursuant to such reservation.

19) All information prepared or collected as a requirement of this Certification (e.g., plans, reports, monitoring results, meeting minutes, and raw data) shall be made available to the public on Douglas PUD's website or by another readily accessible means. Where data or quantitative analysis is involved, it shall be provided in a format that allows others to efficiently validate and analyze data and results.

20) Where this certification refers to "reasonable and feasible" actions or measures, Ecology retains the authority to ultimately determine if an action or measure qualifies as "reasonable and feasible."

6.2 Aquatic Settlement Agreement

Douglas PUD shall operate the Project in compliance with the Wells Aquatic Settlement Agreement, including the six Aquatic Resource Management Plans and their respective Goals and Objectives and Protection, Mitigation and Enhancement Measures (PMEs).

Ecology expects that the measures and processes required in this Certification will protect aquatic life as required under state law and the Clean Water Act. In the event that the Aquatic Settlement agreement, or any Aquatic Resource Management Plan fails, or begins to fail, as determined by Ecology, to adequately protect, in a timely manner, existing or designated uses of water quality, Ecology reserves the right to require such changes including, but not limited to, Goals and Objectives, PMEs, or any operation or physical structures, as it determines necessary to protect these uses or water quality.

For purposes of this Certification, the Goals and Objectives represent important steps toward meeting the designated uses of a water body. They serve as quantifiable goals for moving toward attaining full support of designated uses. They are not intended to serve as a surrogate for the requirement to support and protect designated uses of the waters. Ecology reserves the authority to modify or supplement any of the Goals and Objectives insofar as is necessary to achieve full support and protection of designated uses.

Ecology reserves the right to modify the processes or decisions described herein, including timeframes. If timely progress is not made or plans or reports are not timely submitted, Ecology reserves the right to impose penalties.

1) Adaptive Management

This Certification requires the use of an Adaptive Management process where necessary to meet State water quality standards through the term of the License. As used in this Certification, Adaptive Management means an iterative and rigorous process used to improve

decision-making and achieve objectives in the face of uncertainty. It is intended to improve the management of aquatic resources affected by the Project in order to achieve the Goals and Objectives of the Aquatic Resource Management Plans and water quality standards as effectively and efficiently as possible.

Ecology expects the adaptive management processes contained in this Certification and in the Aquatic Resource Management Plans will be adequate to protect aquatic life as required under state law and the Clean Water Act. It is possible that during the course of the new operating license, there may be instances where the measures found in individual management plans may need to be modified. In those instances, "adaptive management" will be used to achieve the Goals and Objectives. Modification of the Goals and Objectives themselves is a collaborative process within the ASWG and subject to approval by Ecology (see Step h).

For purposes of this Certification, Adaptive Management involves the following steps:

a) Develop initial (or, in subsequent rounds, update) hypotheses regarding any Project effects and potential remedial measures;

b) Complete studies to determine whether the hypothesized impacts are valid, and if valid, quantify the impact resulting from the Project;

c) If the hypothesized impact is validated and quantified, then the ASWG shall identify (or, in subsequent rounds, update) appropriate goals and objectives and implementing measures;

d) Develop and implement reasonable and feasible measures to avoid, minimize or mitigate the identified Project impacts in accordance with an established schedule.

e) Develop monitoring and evaluation methodologies for determining whether the Goals and Objectives have been achieved;

f) Monitor, evaluate and review the implementation of such measures and their effectiveness toward achieving the objectives.

g) Should the implemented measures fail to achieved the goals and objectives over a reasonable time frame, then Douglas PUD shall develop and the ASWG shall evaluate additional or revised measures, including those previously considered in the six Aquatic Resource Management Plans, and Douglas PUD shall implement any additional or revised appropriate and reasonable measures, or explain why such goals and objectives cannot be achieved;

h) If such goals and objectives have not been achieved over a reasonable time frame, the ASWG may reevaluate and revise such Goals and Objectives, subject to review and approval by Ecology.

Parts of steps a) through e) have already been developed as part of the Relicensing process and included in the six Aquatic Resource Management Plans. the goals and objectives are identified in Section 3 of the Aquatic Resource Management Plans. The implementation measures are contained in Section 4. Both these goals and objectives and implementation measures are incorporated as part of this Certification and are to be implemented by Douglas

PUD. The remaining steps shall be implemented through the course of the License, in accordance with the Plans or determined by the ASWG and Ecology.

2) Aquatic Settlement Work Group

a) The purpose of the Aquatic Settlement Work Group (ASWG) is to be the primary forum for consultation and coordination among the PUD and federal, state and tribal parties in connection with implementing the ASA and its six aquatic resource management plans.

b) Douglas PUD shall provide for the meeting space, a facilitator, etc., as described in the ASA.

c) All versions of these plans (with dates) shall be maintained by Douglas PUD on their website, available to the public.

d) If consensus cannot be reached in accordance with the procedures in the ASA, or if decisions conflict with this 401 certification or state law, or if the ASWG ceases to exist, future decisions shall be made by or subject to approval by Ecology.

6.3 Anadromous Species

Douglas PUD shall meet the requirements of the Wells habitat Conservation Plan (HCP) in order to protect the Plan species (spring and summer/fall Chinook, steelhead, sockeye and Coho). This involves collaboration by Douglas PUD with the responsible agencies and tribes through the Wells HCP and with members of the ASWG. However, in the event of a perceived conflict between the HCP and this Certification, it is presumed that the responsible agencies, including Ecology, shall work together to obtain a solution that best meets the needs of all species involved, in accordance with the requirements of the Clean Water Act and the Endangered Species Act.

6.4 Aquatic Resource Management Plans – General Requirements

a) The schedule in each plan is based on the best information available at the time the plan was developed. As new information becomes available, the Goals and Objectives and PMEs may be adjusted through consultation with the ASWG, in accordance with Section 6.2.

b) All versions of these plans (with dates) shall be maintained by Douglas PUD on their website, available to the public.

c) Douglas PUD shall provide a draft annual report to the Aquatic SWG summarizing the previous year's activities undertaken in accordance with each plan. The report will document all activities conducted within the Project and describe activities proposed for the following year. Furthermore, any decisions, statements of agreement, evaluations, or changes made pursuant to each plan will be included in the annual report. If significant activity was not conducted in a given year, Douglas PUD shall prepare a memorandum providing an explanation of the circumstances in lieu of the annual report.

d) The final report is subject to final approval by Ecology for purposes of compliance with federal and state water quality standards, including designated uses.

6.5 Bull Trout, white sturgeon, Pacific lamprey and resident fish

Section 3 (Goals and Objectives) and Section 4 (PMEs) of the white sturgeon, bull trout, Pacific lamprey and resident fish Aquatic Resource Management Plans are attached hereto as Appendices A through D and are hereby incorporated as parts of this Certification.

6.6 Aquatic Nuisance Species (ANS)

Sections 3 and 4 of the Aquatic Nuisance Species Plan are attached hereto as Appendix E and are hereby incorporated as part of this Certification. In addition, within one year following the effective date of the New License, in consultation with the ASWG, Douglas PUD shall develop and begin implementation of an ANS Control and Prevention Plan (Prevention Plan) to monitor and manage invasive species within the Project boundary. The Prevention Plan shall be coordinated with Ecology's Freshwater Aquatic Weed Control Program and the WDFW Aquatic Nuisance Species Program. The Plan shall focus on prevention by addressing the pathways for invasion of aquatic invasive flora and fauna. The Plan shall include, but not be limited to, the following components:

a) Study. Describe existing monitoring and control measures, and potential methods for mitigating impacts of ANS infestations;

b) Prevention. Propose additional prevention, control, and containment measures necessary to prevent infestations and minimize the impact of ANS; and include measures to prevent the movement of ANS into and out of Project boundary waters via recreational watercraft;

c) Education. Identify boat access points and distribute educational materials for distribution during the peak boating season (May 1 - October 30 each year) to educate boaters, conduct voluntary boater surveys, direct voluntary boat inspection demonstrations, and document the findings. Actions shall include:

- Expand distribution of educational materials and increase signage postings to increase boater awareness of dangers of spreading ANS, including the methods one can take to decrease the spread of ANS (e.g., clean the weeds off the boat and drain the live well before going to a new waterbody);
- Explain to boaters at boat ramps the requirements of the ANS program and conduct voluntary boat inspection demonstrations for the purpose of identifying and removing aquatic invasive species from boats and trailers; and
- Hand out prepared surveys to boaters, asking for their participation in filling out and submitting the surveys, and explaining the purpose and benefit of the survey;

d) Rapid Response. An Early Detection and Rapid Response component to include the following elements:

- Reporting the type, location, and extent of ANS infestations within the Project boundary.
- Measures to identify new introductions and monitor the spread of existing ANS.

e) Reporting. By March 1 of each year, submit an annual report to WDFW and Ecology to include: the number of boats inspected; the number of boats detected carrying non-native aquatic invasive flora or fauna; a description of new infestations of ANS; a description of existing infestations; a summary of progress made in reducing or eliminating infestations; recommendations for modifying the plan as needed; and information regarding boat travel to and from other water bodies.

6.7 Water Quality Management Plan

The Water Quality Management Plan (WQMP) for this Certification consists of the following: Goals and Objectives; Protection, Mitigation and Enhancement Measures (PMEs); and additional requirements for TDG, Spill Prevention and Control, Quality Assurance and Reporting, and Construction Activities. These requirements are described below.

1) Goal and Objectives

Douglas PUD shall implement the following Goals and Objectives:

The Goal of the WQMP is to protect the quality of the surface waters affected by the Project and to ensure that Washington's water quality standards are met.

Objective 1: Ensure that compliance with state WQS for TDG is achieved. Compliance is to be achieved within ten years of the issuance of the New License. Measures are specified to address non-attainment of standards after this time period.

Objective 2: Maintain compliance with state WQS for water temperature. If information becomes available that suggests non-compliance is occurring or likely to occur, the Aquatic SWG will identify reasonable and feasible measures, which shall be implemented by Douglas PUD;

Objective 3: Maintain compliance with state WQS for other numeric criteria. If information becomes available that suggests non-compliance is occurring or likely to occur, the Aquatic SWG will identify reasonable and feasible measures, which shall be implemented by Douglas PUD;

Objective 4: Operate the Project in a manner that will avoid, or where not feasible to avoid, minimize, spill of hazardous materials and implement effective countermeasures in the event of a hazardous materials spill; and

Objective 5: Participate in regional forums tasked with improving water quality conditions and protecting designated uses in the Columbia River basin.

2) Water Quality Measures

Douglas PUD, in consultation with the Aquatic SWG, shall implement the following measures.

a) Total Dissolved Gas (Objective 1)

Gas Abatement Plan and TDG Exemption

i) Pending Ecology's approval of each subsequent GAP (which provides for the TDG exemption), Douglas PUD shall continue to implement the activities identified within the previously-approved plan. Douglas PUD shall submit the GAP to Ecology by February 28th of each year, or on a less frequent basis, as documented by Ecology in writing. Douglas PUD shall submit the GAPs through the term of the new license or until no longer required by Ecology.

ii) The GAP will include the Spill Operations Plan and will be accompanied by a fisheries management plan and physical and biological monitoring plans. The GAP shall include information on any new or improved technologies to aid in the reduction in TDG.

iii) It is anticipated that: (1) the TDG monitoring activities described above will be adequate for the physical monitoring plan requirement; and (2) the Wells HCP and Aquatic Resource Management Plans in the Aquatic Settlement Agreement with respect to fish passage will be adequate for fish management plans, for the purposes of the GAP. Additional biological monitoring studies for purposes of Gas Bubble Trauma Monitoring may be required.

iv) Douglas PUD shall provide an annual TDG report.

Monitoring

Douglas PUD shall continue to maintain fixed monitoring stations in the forebay and tailrace of Wells Dam to monitor TDG and barometric pressure. TDG will be monitored hourly during the fish spill season each year. Data from the Wells forebay and tailrace stations will be transmitted on a daily basis to the applicable web-accessible database used by Ecology and regional fish management agencies. Douglas PUD shall maintain this monitoring program consistent with activities described in the Wells Gas Abatement Plan (GAP).

Douglas PUD shall provide an annual report of all spill (and predicted TDG levels in the tailrace) occurring outside the fish passage season (currently October 1 to March 15).

Spill Operations

Within one year of issuance of the new license, Douglas PUD shall coordinate the annual HCP Project Fish Bypass/Spill Operations Plan with the Aquatic SWG and the GAP, using best available information to minimize the production of TDG during periods of spill. In consultation with the Wells HCP Coordinating Committee and Aquatic SWG, the spill operations plan will be reviewed and updated, as necessary.

Compliance Schedule

Douglas PUD shall use Adaptive Management to address compliance within 10 years of issuance of the New License. To accomplish this, at a minimum, Douglas PUD shall prepare, in consultation with the Aquatic SWG and within one year of license issuance, a plan that is approved by Ecology and that:

i) Identifies all reasonable and feasible improvements that could be used to meet TDG standards, including requirements of the TMDL. Data on high TDG levels and flow coming into the Wells forebay and its effects on Project compliance shall be included;

ii) Contains the analytical methods that will be used to evaluate all reasonable and feasible improvements;

iii) Any supplemental monitoring that is necessary to track compliance with the numeric WQS;

iv) Benchmarks and reporting sufficient for Ecology to track Douglas PUD's progress toward implementing this plan within the designated time period.

Measures to Address Non-Attainment of Standards

If the WQS is not met at the end of the compliance period, or after completion of all reasonable and feasible improvements, Douglas PUD shall, in conjunction with the Aquatic SWG, take the following steps:

i) Evaluate any new reasonable and feasible technologies that have been developed; and

ii) After the evaluation, if no new reasonable and feasible improvements have been identified, propose an alternative to achieve compliance with the standards, such as site-specific criteria, a use attainability analysis, or a water quality offset.

Additional Requirements - TDG

i) Douglas PUD shall continue to monitor TDG for the term of its License.

ii) QA/QC. The TDG monitoring program shall be at least as stringent as the quality assurance/quality control (QA/QC) calibration and monitoring procedures and protocols developed by the United States Geological Service (USGS) monitoring methodology for the Columbia River.

iii) Frequency. Douglas PUD shall maintain a TDG monitoring program at its Fixed Monitoring Station (FMS) locations or other locations as determined by Ecology. Measurements shall be made hourly throughout the year.

iv) Gas Abatement Plan (GAP) report. A GAP report is required annually by December 31 of each year, unless otherwise provided for in writing by Ecology. The GAP report shall include results of any HCP survival studies for the previous year.

v) Plans and Reports for Non-Fish-Spill Seasons. Douglas PUD shall provide an annual monitoring plan and report for operations during the non-spill season. The report and plan are due at the same time the GAP and GAP reports are due and are subject to approval by Ecology (i.e., December and February).

vi) 10-Year Technical Assessment Study. Beginning in the year of compliance with all TDG standards and every ten years thereafter, an updated technical assessment study shall be prepared, and include, in addition to information on any new or improved technologies, a review of reasonable and feasible gas abatement options to further incrementally reduce TDG production. If any reasonable and feasible measures are identified, an implementation plan shall be provided to Ecology for review and approval, and implemented, in accordance with the terms of the plan.

vii) Minimizing Spill. Douglas PUD shall manage spill at Wells dam toward meeting water quality criteria for TDG, as reasonable and feasible, and without further damaging aquatic life, as follows:

- Minimize voluntary spill through operations, including to the extent practicable, by scheduling maintenance based on predicted flows;
- Avoid spill by continuing to participate in the Hourly Coordination Agreement, or any successor agreement to which Douglas PUD is a party, to the extent the agreement reduces TDG; and
- Maximize powerhouse discharge, especially during periods of high river flows.

viii) Changes in Operation or Structure. Douglas PUD shall provide Ecology with the opportunity to review and condition any non-routine operational or structural changes affecting TDG that are not identified in this Certification. If Douglas PUD, at any point, considers or chooses not to implement any of the measures identified in the spill playbook, Douglas PUD shall immediately develop proposed alternative(s) that will produce levels of TDG equal to or less than those estimated to be produced by the measures to be replaced. These measures should be implementable in a similar timeframe and must be submitted to ecology for review and approval.

ix) The Project shall be deemed in compliance with the TMDL for TDG while it remains in compliance with the terms of this Certification.

b) Water Temperature (Objective 2)

Monitoring

Douglas PUD shall continue to monitor temperature at the Wells Dam forebay and tailrace in conjunction with its TDG monitoring program (currently April 1-September 15). Temperature data from the TDG monitoring program will be recorded hourly and reported daily to regional databases. Water temperatures shall also be monitored at all boundary conditions of the Project (Methow River RM 1.5, Okanogan River RM 10.5, and Columbia River RM 544.5) and in the Well Dam forebay and tailrace as required by the Aquatic SWG. Douglas PUD shall continue to collect hourly fish ladder temperatures 24 hours a day during the fish passage season (May 1 to November 15) at Pool No. 39 on the east ladder. Water

temperatures shall also be monitored hourly in the auxiliary water supply system and near the east shore of the Wells Dam forebay (bottom, middle, and surface depths) during this same time period.

Temperature TMDL Development and Implementation

Douglas PUD shall participate in U.S. EPA (Environmental Protection Agency) Region 10's water temperature TMDL development for the U.S. portion of the Columbia River, in coordination with the Parties of the Aquatic SWG. Temperature data from the monitoring program at Wells Dam and software and results of the CE-QUAL-W2 model will be made available to EPA and other entities to assist in the development of the Columbia River temperature TMDL.

When the TMDL and its implementation plan are complete and approved by EPA, Ecology anticipates that it may amend this Certification to include requirements consistent with the TMDL.

If a TMDL is not timely approved by EPA, Ecology may establish an allocation. In this case, Ecology will work with the Aquatic SWG and other interested parties to identify reasonable and feasible measures.

This plan does not exclude the option of the Aquatic SWG to consider modifying the water quality standard through a use attainability analysis or other process.

Measures to Address Non-Compliance

Douglas PUD shall report information indicative of non-compliance with water temperature immediately to Ecology for regulatory discretion and to the Aquatic SWG for consideration. Such information may include changes in Project operations likely to increase water temperature or observations inconsistent with related environmental parameters.

If the Project is found to be consistently out of compliance with water temperature at any time during the new license term, Douglas PUD shall, in coordination with the Aquatic SWG, take the following steps:

i) Evaluate alternative Project operations or any new reasonable and feasible technologies that have been developed; and

ii) After the evaluation, if no new reasonable and feasible improvements have been identified, propose an alternative to achieve compliance with the standards, such as site-specific criteria, a use attainability analysis, or a water quality offset.

c) Other Numeric Criteria (Objective 3)

Douglas PUD shall report information indicative of non-compliance with other numeric criteria immediately to Ecology for regulatory discretion and to the Aquatic SWG for consideration. This includes existing or developed criteria for toxic substances in water or

sediments within Project Boundaries. Ecology shall evaluate the information, and, if needed, require Douglas PUD to develop a plan to identify and address Project-related impacts, if any. After the evaluation, if no reasonable and feasible improvements have been identified, Douglas PUD may propose an alternative to achieve compliance with the standards, such as site-specific criteria, a use attainability analysis, or a water quality offset.

d) Spill Prevention and Control (Objective 4)

Spill Prevention and Control Requirements

Douglas PUD shall operate the Project in a manner that will minimize spill of hazardous materials and implement effective countermeasures in the event of a hazardous materials spill. The Project Spill Prevention Control and Countermeasures Plan (SPCC) will be updated pursuant to FERC requirements and recommendations as provided by Ecology. Douglas PUD shall comply with the updated version(s) of the SPCC.

Participation in the Columbia and Snake River Spill Response Initiative

Douglas PUD shall continue participation in the Columbia and Snake River Spill Response Initiative (CSR-SRI). The CSR-SRI is a collaborative effort made up of the local, state, and federal oil spill response community as well as members of industry and was developed to address the immediate need for oil spill preparedness and response in the area along the Columbia and Snake Rivers. In addition to participation in the CSR-SRI, Douglas PUD shall continue to operate the Project in accordance with its SPCC.

Inspections

For the term or the new license, Douglas PUD shall, upon reasonable notice, allow Ecology staff or representatives access to inspect the Project, including inside the dam, for the purpose of assessing Spill Prevention and Control measures and compliance with this section 2(d). Following inspection, Douglas PUD shall address oil and hazardous material prevention and control issues identified by Ecology.

Additional Requirements - Spill Prevention and Control

Discharge of oil, fuel or chemicals into state waters or onto land where such contaminants could potentially drain into state waters is prohibited.

Douglas PUD shall continue to provide Ecology, Central Region Office, Spills and Water Quality Programs, with copies of its most up-to-date SPCC version. Copies of the SPCC shall be kept on site by Douglas PUD and made readily available for reference by the PUD, its contractors and consultants, and by Ecology.

In the event of a discharge of oil, fuel or chemicals into state waters, or onto land where such contaminants could potentially drain into state waters, containment and clean-up efforts shall begin immediately and be completed as soon as possible, taking precedence over normal work. Clean-up shall include proper disposal of any spilled material and used clean-up materials.

Spills into state waters, spills onto land where contaminants could potentially drain into state waters, and any other significant water quality impacts, shall be reported immediately to the Washington Emergency Management Division at 1-800 258-5990 and the National Response Center at 1-800-424-8802. Notification shall include a description of the nature and extent of the problem, any actions taken to correct the problem, plus any proposed changes in operations to prevent further problems.

e) Regional Forums (Objective 5)

Participation in Regional Water Quality Forums. Douglas PUD shall continue to participate in both the Water Quality Team and Adaptive Management Team meetings to address regional water quality issues, including sharing the results from monitoring, measuring, and evaluating water quality in the Wells Project. However, Douglas PUD shall not advocate for any water quality measures in regional forums without consulting with the Aquatic SWG.

Project Operations. Douglas PUD may, following notice and opportunity for hearing, coordinate the operation of the project, electrically and hydraulically, with other mid-Columbia hydroelectric operations to the extent practicable. Coordinated operations are intended to reduce spill, increase generating efficiencies and thereby reduce the potential for exceedances of the TDG numeric criteria. These coordinated operations should be beneficial to TDG compliance and Aquatic Resources.

f) Study Plans and Reports

i) *Study Plans*. Douglas PUD shall prepare study plan(s) that include a quality assurance project plan(s) (QAPP) for each water quality parameter to be monitored in each plan. The QAPPs shall follow the Guidelines for Preparing Quality Assurance Project Plans for Environmental Studies (July 2004 Ecology Publication Number 04-03-030) or its successor. The QAPPs shall contain, at a minimum, a list of parameter(s) to be monitored, a map of sampling locations, and descriptions of the purpose of the monitoring, sampling frequency, sampling procedures and equipment, analytical methods, quality control procedures, data handling and data assessment procedures and reporting protocols.

Douglas PUD shall review and update the QAPPs annually based on a yearly review of data and data quality. Ecology may also require future revisions to the QAPP based on monitoring results, regulatory changes, changes in Project operations, and/or the requirements of TMDLs. The initial QAPPs and any changes shall be submitted to the Aquatic SWG for review and are subject to approval by Ecology. Implementation of the monitoring program shall begin upon Ecology's written approval of the QAPP, unless otherwise provided by Ecology.

ii) *Additional Requirements – Reports*
Reporting Results. Water quality monitoring results, along with a summary report, shall be submitted by March first of each year to the Department of Ecology, Central Regional Office or as otherwise agreed to. A summary of monitoring results, any

analyses and compliance with the WQS numeric criteria shall be included in an appendix to the draft and final annual reports. The results shall be provided in a format prescribed by Ecology. Ecology will use the monitoring results to track the project's progress toward meeting and remaining in compliance with state water quality standards.

Duration. The monitoring required under this Certification shall continue throughout the life of the New License and any subsequent renewals of that license, unless modified by Ecology.

6.8 Construction Activities

a) While the existing project is not a construction site, all development or mitigation projects proposed under relicensing must meet the following conditions. These conditions do not supersede separate conditions required for turbine replacement.

b) For future construction activities requiring a separate 401 certification (e.g., those requiring an individual 404 permit from the Army Corps of Engineers), Douglas PUD shall comply with all conditions in that additional 401 certification**.**

c) All water quality criteria as specified in WAC 173-201A apply to any construction work needed to implement development or mitigation projects required under the new FERC license.

d) Unless otherwise stated in another Section 401 certification (see above), the turbidity criteria (WAC 173-201A) may be modified to allow a temporary mixing zone during and immediately after in-water or shoreline construction activities that disturb in-place sediments. A temporary turbidity mixing zone is subject to the constraints of WAC 173-201A, and is authorized only after the activity has received all other necessary local and state permits and approvals and after the implementation of appropriate best management practices (BMPs) to avoid or minimize disturbance of in-place sediments and exceedances of the turbidity criterion. The temporary turbidity mixing zone for waters with flows greater than 100 cubic feet per second (cfs) at the time of construction is 300 feet downstream of the activity causing the turbidity exceedances.

e) For all other future construction activities, a water quality protection plan (WQPP) shall be prepared and implemented for each project involving work in or near water. The WQPP shall include:

- A copy of the Hydraulic Project Approval (HPA) per Ch. 75.20 RCW for the project;
- A description of all Best Management Practices (BMPs) to be employed for in and near-water work.
- A plan for sampling and monitoring during construction;
- A plan for implementing mitigation measures should a water quality violation occur; and
- A written procedure for reporting any water quality violations to Ecology.

f) Douglas PUD shall submit each WQPP to Ecology for review and written approval prior to starting work.

7.0 PENALTIES AND APPEAL

Any person who fails to comply with any provision of this Certification shall be liable for criminal and civil penalties as provided under state and/or federal law.

You have a right to appeal this Order to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of this Order. The appeal process is governed by Chapter 43.21B RCW and Chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal you must do the following within 30 days of the date of receipt of this Final Order:

File your appeal and a copy of this Order with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.

Serve a copy of your appeal and this Order on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.

You must also comply with other applicable requirements in Chapter 43.21B RCW and Chapter 371-08 WAC.

ADDRESS AND LOCATION INFORMATION

Street Addresses	Mailing Addresses
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503 **Pollution Control Hearings Board** 1111 Israel RD SW STE 301 Tumwater, WA 98501	**Department of Ecology** Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608 **Pollution Control Hearings Board** PO Box 40903 Olympia, WA 98504-0903

Dated this ____day of _____, 2011, at Yakima, Washington.

Charles McKinney, Water Quality Section Manager
Central Regional Office
Washington State Department of Ecology

REFERENCES

Ecology, 2004. Total Maximum Daily Load for Total Dissolved Gas in the Mid-Columbia River and Lake Roosevelt. Publication No. 04-03-002.

Ecology, 2004. Lower Okanogan River Basin DDT and PCBs Total Maximum Daily Load (TMDL). Publication No. 04-10-043.

Erlandsen Associates, 2006. Okanogan River cross sections and bottom elevation contours within the Wells Hydroelectric Project, 1997 and 2006. Prepared for Douglas County PUD. 9 pp.

Jacobs 2009. Spill Prevention Control and Countermeasure (SPCC) Plan; Wells Hydroelectric Project.

Politano, M., A.A. Amado, and D. Hay, 2009. Total Dissolved Gas Modeling and Compliance Evaluation for the Wells Hydroelectric Project.

West Consultants and Douglas PUD, 2008. Development of Water Temperature Model Relating Project Operations to Compliance with the Washington State and EPA Water Quality Standards.

APPENDICES A-E

WELLS SETTLEMENT AGREEMENT

AGUATIC RESOURCE

MANAGEMENT PLAN

for

A. White Sturgeon

B. Bull Trout

C. Pacific Lamprey

D. Resident Fish

E. Aquatic Nuisance Species

APPENDIX A

WHITE STURGEON MANAGEMENT PLAN

3.0 GOAL AND OBJECTIVES

The goal of the WSMP is to increase the white sturgeon population in the Wells Reservoir to a level that can be supported by the available habitat and characterized by a diverse age structure consisting of multiple cohorts (juvenile and adult). In addition, the WSMP is intended to support spawning, rearing and migration as identified by the aquatic life designated use under WAC 173-201A in the Washington state water quality standards. Based upon the available information, the Aquatic SWG agreed that a rigorous and reliable assessment of ongoing Project effects on white sturgeon was not practical given sturgeon life history characteristics and the limited number of fish estimated to exist in the Wells Reservoir. Therefore, the Aquatic SWG concluded that efforts should focus, initially, on supplementation efforts to increase the population within the Wells Reservoir in order to address Project effects. Once the population numbers have been increased to a level that can be studied, as determined by the Aquatic SWG, Douglas shall implement a monitoring and evaluation program to accurately assess natural recruitment, juvenile habitat use, emigration rates, carrying capacity, and the potential for natural reproduction so as to inform the scope of a future, long-term supplementation strategy. The PMEs of the WSMP are designed to meet the following objectives:

Objective 1: Supplement the white sturgeon population in order to address Project effects, including impediments to migration and associated bottlenecks in spawning and recruitment;

Objective 2: Determine the effectiveness of the supplementation activities through a monitoring and evaluation program;

Objective 3: Determine the potential for natural reproduction in the Wells Reservoir in order to appropriately inform the scope of future supplementation activities;

Objective 4: Adaptively manage the supplementation program as warranted by the monitoring results and in consultation with the Aquatic SWG;

Objective 5: Evaluate whether there is biological merit to providing safe and efficient adult upstream passage;

Objective 6: Identify white sturgeon educational opportunities that coincide with WSMP activities.

This WSMP is intended to be compatible with other white sturgeon management plans in the Columbia River mainstem. Furthermore, this management plan is intended to be not inconsistent with other management strategies and recovery goals of federal, state and tribal natural resource management agencies. The WSMP is not intended to be a harvest management plan and does not create or supersede jurisdiction over fisheries management decisions made by the responsible fishery agencies and tribes. However, the WSMP activities are expected to ultimately support appropriate and reasonable harvest opportunities consistent with the goals of the responsible fishery agencies and tribes and designated use for harvest under WAC 173-201A identified in the Washington state water quality standards. Should the responsible fishery agencies and tribes determine that there is an ongoing harvestable surplus of sturgeon in the Wells Reservoir, then this indicates significant progress toward achievement of the goals and objectives of this plan.

Douglas in consultation with the Aquatic SWG, developed the goal, objectives, and PMEs described in this section. The extent to which implementation of the proposed PMEs successfully achieve the WSMP goal and objectives identified shall be determined through the monitoring and evaluation program. Once the results of the monitoring and evaluation program have been considered, Douglas shall determine, in consultation with the Aquatic SWG, whether changes to the sturgeon stocking program are needed to meet the goals and objectives of the management plan.

The schedule for implementation of specific measures within the WSMP is based on the best information available at the time the Plan was developed. As new information becomes available, implementation of each activity may be adjusted through consultation with the Aquatic SWG.

4.0 PROTECTION, MITIGATION AND ENHANCEMENT MEASURES

In order to fulfill the goal and objectives described in Section 3.0, Douglas, in consultation with the ASWG, shall develop and implement a white sturgeon management program that includes PMEs. The Program shall be designed for implementation in two phases. Phase I of the PMEs shall be implemented during the first ten years of the new license and consist of supplementation, monitoring and evaluation activities. Results of Phase I PMEs will be used to inform the scope of continued PMEs during Phase II, which shall be implemented for the remainder of the new license.

Douglas, in consultation with the ASWG, shall initiate implementation of the following PMEs during the 50-year license term:

Phase I (Years 1-10)

- Development of a Brood Stock Collection and Breeding Plan (Year 1 and updated as determined by the Aquatic SWG, See Section 4.1.1);
- Brood Stock Collection (Years 1-4 and other years TBD by the Aquatic SWG, see Section 4.1.1);
- Juvenile Stocking (Years 2-5 and other years TBD by the Aquatic SWG, see Section 4.1.2);
- Index Monitoring Program (Years 3-5 and 2 more years prior to Year 10 TBD by the Aquatic SWG, see Section 4.2.1);
- Marked Fish Tracking (Years 3-5 and 2 more years prior to Year 10 TBD by the Aquatic SWG, see Section 4.2.2);
- Natural Reproduction Assessments (5 annual assessments over the license term, see Section 4.2.3)[*];

[*] Natural reproduction assessments can be implemented over the term of the license (Phase I and Phase II) as determined by the Aquatic SWG.

Phase II (Years 11-50)

- Long-term juvenile stocking (stocking rate and frequency TBD by Aquatic SWG in Years 11-50, see Section 4.4.1);
- Supplementation Program Review (Years 11-50 TBD by the Aquatic SWG, see Section 4.4.2);
- Long-term Index Monitoring Program (Year 12 and once every 3-5 years thereafter TBD by the Aquatic SWG, see Section 4.4.3);
- Adult Passage Evaluation (Year 11 and once every 10 years thereafter, see Section 4.4)

As determined by the Aquatic SWG, appropriate educational opportunities coinciding with implementation of WSMP activities (Section 4.5) will be made available during the entire 50 year license term.

The following sections describe, in detail, the components, timing of implementation, and decision-making process of the PMEs to be conducted during Phase I and II of the white sturgeon management program.

a) Phase I Supplementation Program (Objective 1)

4.a.1 Brood Stock Collection and Breeding Plan

Due to the low numbers of sturgeon indicated by the 2001-2003 white sturgeon study and the need to increase genetic variation, there is a low probability that brood stock from only the Wells Reservoir can be utilized as the basis for supplementation activities. Consequently, other sources of fish must be considered in addition to capturing fish from Wells Reservoir to increase the white sturgeon population. Within one year of issuance of the new license Douglas shall prepare and implement a Brood Stock Collection and Breeding Plan, in consultation with the Aquatic SWG, which considers such factors as genetics and questions of imprinting, and are consistent with the goal and objectives of the WSMP and includes the level of detail provided in other existing white sturgeon breeding plans.

Following is a prioritized list of juvenile fish source options that shall be incorporated into a Brood Stock Collection and Breeding Plan:

- Brood stock collected from the Wells Reservoir;
- Brood stock collected from nearby reservoirs (Priest Rapids, Wanapum, Rocky Reach, Rock Island);
- Brood stock collected from McNary Reservoir;
- Juvenile production from the Lake Roosevelt white sturgeon recovery effort;
- Brood stock collected from below Bonneville Dam in the lower Columbia River;
- Juveniles purchased from a commercial facility.

A white sturgeon supplementation program may include, but may not be limited to, the following implementation options (Not listed in a priority order):

- Build new or retrofit existing Douglas funded hatchery facilities to accommodate white sturgeon brood stock, egg incubation, and juvenile rearing;
- Development of a mid-Columbia hatchery facility funded by the three PUDs (Douglas, Chelan, and Grant) to accommodate various phases of white sturgeon supplementation; brood stock, egg incubation, and juvenile rearing;
- Direct release into the Wells Reservoir of juveniles produced via appropriate Breeding Plan criteria and reared at a commercial facility;
- Direct release into the Wells Reservoir juveniles or adults trapped and hauled from the lower Columbia River.

The initial source of brood stock shall be determined within the first year of issuance of the new license. Collection of brood stock shall occur consistent with the brood stock collection plan in years 1-4 of the new license. Any additional years during the Phase I program (first ten years of the new license) in which brood stock collection shall occur in order to facilitate additional juvenile stocking into the Wells Reservoir (Section 4.1.2) will be determined by the Aquatic SWG. The intent of brood stock collection is to use their progeny, if feasible, for future white sturgeon stocking activities in the Wells Reservoir. The brood stock collection plan shall be updated annually, or as otherwise recommended by Douglas in consultation with the ASWG, to incorporate new and appropriate information.

4.a.2 Juvenile White Sturgeon Stocking

Within two years following issuance of the new license, Douglas shall release up to 5,000 yearling white sturgeon into the Wells Reservoir annually for four consecutive years (20,000 fish total). Additional years and numbers of juvenile sturgeon to be stocked during Phase I will be determined by the Aquatic SWG and will not exceed 15,000 juvenile sturgeon (total of 35,000 juvenile sturgeon during Phase I). In consultation with the Aquatic SWG, yearling fish for release shall be acquired through one or more of the sources listed in priority order in Section 4.1.1 above, or through other measures identified by the Aquatic SWG. If juvenile sturgeon stocking deadlines cannot be achieved, the Aquatic SWG will determine alternative implementation measures that will be undertaken by Douglas (see Table 4.7-1, footnote 2).

Douglas shall ensure that all hatchery-reared juvenile white sturgeon released into the Wells Reservoir are marked with Passive Integrated Transponder (PIT) tags and year-specific scute marks for monitoring purposes described in Section 4.2 of this plan. In order to allow for tracking of juvenile white sturgeon emigration described under Section 4.2.2, Douglas shall ensure that up to one percent (or a maximum of 50) of the juvenile white sturgeon released into the Wells Reservoir are large enough to allow implantation of an active tag prior to release. In addition, following the third year of supplementation (unless the Aquatic SWG determines more analysis is required), the Aquatic SWG may elect to release juveniles at an earlier or later life stage for the fourth year in order to compare success of fish released at varying life stages. For example, the Aquatic SWG may elect to have a proportion of the hatchery-reared juveniles released at differing size intervals (with the minimum size being that which permits PIT tagging), in order to monitor potential differences in survival and growth during future indexing periods.

b) Phase I Monitoring and Evaluation Program (Objective 2)

Douglas shall conduct a monitoring and evaluation program within the Wells Reservoir for the purpose of assessing the effectiveness of the supplementation activities described in Section 4.1 and outlined in Table 4.7-1. Monitoring shall include both an Index Monitoring Program (Section 4.2.1) and a Marked Fish Tracking Program (Section 4.2.2). Both of these studies will be used to collect life history and population dynamics information including rates of fish movements into and out of the Wells Reservoir and habitat use. Douglas shall also obtain updated information, when available, on other white sturgeon recovery programs (e.g., Upper Columbia River, Kootenai River, mid-Columbia PUDs), in order to improve the monitoring and evaluation program and refine its implementation. The results of this information will also inform supplementation, monitoring and evaluation activities during implementation of Phase II of the WSMP.

4.b.1 Index Monitoring Program

Within three years following issuance of the New License, Douglas shall initiate a three-year index monitoring program (Years 3-5) for juvenile and adult sturgeon in the Wells Reservoir to determine age-class structure, survival rates, abundance, density, condition factor, growth rates, and to identify distribution and habitat selection of juvenile sturgeon. The indexing methods shall include using gillnets, set lines or other appropriate recapture methods for juveniles and adults.

As a component of the Phase I indexing program, Douglas shall capture and implant active tags in a portion of the juvenile and sexually mature adult sturgeon population found in the Wells Reservoir. This tagging effort shall be used to augment broodstock collection (Section 4.1.1), population level information and juvenile habitat use (Section 4.2.2) and natural reproduction potential (Section 4.2.3).

After the initial three-year indexing period (Years 3-5), Douglas shall conduct an additional two years of index monitoring in Phase I as determined by the Aquatic SWG. After year 9, an additional year of index monitoring would take place in year 12 and then every three to five years over the term of the new license (Phase II) to assess age-class structure, survival rates, abundance, condition factor, growth rates; identify distribution and habitat selection of juvenile sturgeon; and to inform the supplementation program strategy (see Table 4.7-1).

Frequency (every 3, 4 or 5 years) of implementation of a long-term index monitoring activities (after year 12) will be determined by the Aquatic SWG. Phase II index monitoring activities will not consist of implantation of active tags in captured individuals.

4.b.2 Marked Fish Tracking Program

Beginning in year three of the new license and continuing for three years (Years 3-5), Douglas shall conduct tracking surveys of the juvenile white sturgeon that were released with active tags as part of supplementation activities. This will require one percent of each of the annual classes of juvenile sturgeon (up to a maximum of 50 fish each year) released in years 2, 3, 4, and 5 to be reared large enough to implant an active tag for tracking purposes (See Table 4.7-1). The purpose of tracking active-tagged fish is to determine juvenile white sturgeon emigration rates out of the Wells Reservoir and habitat use within the Wells Reservoir.

Douglas shall repeat the tracking survey for two additional years during Phase I (see Table 4.7-1). The additional two years of surveys shall track: 1) active tags implanted in a percentage of juvenile fish from previous years of supplementation activities (dependent upon tag life) and 2) any juvenile and adult fish implanted with active tags during the last indexing period preceding the survey. Subsequent Phase I surveys are likely to coincide with the additional Phase I index monitoring and juvenile stocking activities.

4.b.3 Determining Natural Reproduction Potential (Objective 3)

In years where environmental conditions are appropriate, Douglas shall track sexually mature adult sturgeon that were captured and implanted with active tags under Section 4.2.1 for the purpose of identifying potential spawning locations and determining natural reproduction potential. Appropriate environmental conditions may be determined by examining the following factors: water quality and quantity (i.e., flow, temperature, and turbidity), the presence of reproductively viable adults during index monitoring activities, and the status of maturity for supplemented fish. In years in which sexually mature adult sturgeon are tagged under Section 4.2.1, Douglas may also utilize egg collection mats in combination with tracking in areas of the Wells Reservoir for the purpose of identifying potential spawning locations and activity. Five surveys of natural reproduction using adult tracking and/or egg mat placement shall occur over the term of the new license. Several of these surveys are intended to be implemented during the latter part of the license in order to examine the natural reproductive potential of supplemented fish recruiting to sexually maturity. These activities will support the aquatic life designated use for spawning under WAC 173-201A in the Washington state water quality standards.

c) Phase II Supplementation and Monitoring Program (Objective 2 and 4)

The information collected through activities described in Section 4.1-4.3 will provide insight into the population dynamics, habitat availability, and limiting factors that affect the natural population structure of white sturgeon within the Wells Reservoir. This information will inform supplementation, monitoring and evaluation activities during implementation of Phase II supplementation and monitoring activities in the WSMP for the duration of the new license term after year 10.

4.c.1 Long-Term Juvenile White Sturgeon Stocking

The number and frequency of yearlings released in Phase II of the white sturgeon supplementation program will range from 0 to 5,000 fish. Stocking rates shall be based on the results of the Phase I Monitoring and Evaluation Program (Section 4.2) and determination of carrying capacity (Section 4.3) and shall be consistent with the goal and objectives of the WSMP. The Phase II stocking rates can also be adjusted as determined by the Aquatic SWG (also see Table 4.7-1, footnotes 2 and 3).

4.c.2 Supplementation Program Review

Douglas shall compile information on other white sturgeon supplementation programs in the Columbia River Basin in order to assess whether the white sturgeon supplementation program being implemented at the Project is: (i) consistent and comparable with the technology and methods being implemented by other supplementation programs in the region; (ii) reasonable in cost and effective to implement at the Project; and (iii) consistent with the supplementation program goals and objectives. The supplementation program review will be conducted annually in coordination with the development of the annual report (Section 4.6).

4.c.3 Long-term Index Monitoring Program

Beginning in Year Twelve of the new license and every 3 to 5 years thereafter for the duration of the new license, Douglas shall continue to conduct a Phase II Index Monitoring Study for juvenile and adult sturgeon in the Wells Reservoir. This program will be used to monitor age-class structure, survival rates, abundance, condition factor, growth rates, identify distribution and habitat selection of juvenile sturgeon, and may continue to support broodstock collection activities. The indexing methods will include using gillnets or other appropriate recapture methods for juveniles and set lines for adults and will not consist of actively tracking fish. Frequency (every 3, 4, or 5 years) of implementation of long-term index monitoring activities (after year 12) will be determined by the Aquatic SWG.

d) Evaluation and Implementation of Adult Passage Measures (Objective 5)

In Year Eleven of the new license and every 10 years thereafter for the duration of the new license unless otherwise determined by the Aquatic SWG, the Aquatic SWG shall evaluate the biological merit to providing upstream passage for adult white sturgeon. The assessment of biological merit shall be determined by: (i) evaluating information gathered from monitoring and evaluation activities and determining whether there is significant biological benefit and need for upstream passage; (ii) the availability of reasonable and appropriate means to provide upstream passage; and (iii) consensus from all other operators of the mid-Columbia projects to implement adult upstream passage measures[1]. If all three criteria above are met, Douglas, in consultation with the Aquatic SWG shall develop adult passage measures that are consistent with measures being implemented by other mid-Columbia project operators.

e) Educational Opportunities Coinciding with WSMP Activities (Objective 6)

Douglas, in consultation with the Aquatic SWG, shall identify appropriate WSMP activities as opportunities for education to local public entities such as schools, cities, fishing and recreation groups, and other interested local groups. WSMP activities that may be appropriate for public participation are hatchery tours, release of hatchery juveniles, and tagging of juveniles prior to release.

f) Reporting

Douglas will provide a draft annual report to the Aquatic SWG summarizing the previous year's activities undertaken in accordance with the WSMP. The report will document all white sturgeon activities conducted within the Project. Furthermore, any decisions, statements of agreement, evaluations, or changes made pursuant to this WSMP will be included in the annual report. If significant activity was not conducted in a given year, Douglas will prepare a memorandum providing an explanation of the circumstances in lieu of the annual report.

[1] The intent is to provide connectivity to the Hanford Reach white sturgeon population.

g) Implementation Schedule

Table 4.7-1 outlines an estimated long-term schedule of the activities described in Sections 4.1-4.4.

Table 4.7-1 Project White Sturgeon Implementation Schedule

New License Year	Brood Stock Plan and Collection[1]	Release Fish into Wells Reservoir[2]	Index Monitoring[3]	Tracking Marked Fish[4]	Natural Production Assessment[5]	Adult Passage Evaluation
PHASE I						
1	X				TBD	
2	X	X				
3	X	X	X	X	TBD	
4	X	X	X	X		
5	TBD	X	X	X		
6	TBD	TBD			TBD	
7	TBD	TBD	TBD	TBD		
8	TBD	TBD				
9	TBD	TBD	TBD	TBD		
10	TBD	TBD			TBD	
PHASE II[6]						
11	Level and frequency TBD	Level and frequency TBD				X[7]
12			X			
13-50			TBD		TBD	Every ten years after Year 11

[1]Douglas brood stock plan shall be completed within one year following this issuance of the new license. Brood stock collection activities will occur at a minimum in years 1-4 during the new license term. Additional years, during Phase I, will be determined by the Aquatic SWG. In Year 11 (Phase II), level and frequency of activity will be determined by the Aquatic SWG and will be based upon the level of long-term supplementation identified from monitoring results.

[2]No more than a total of 35,000 fish will be stocked in Phase I (Years 1-10). The Phase II supplementation program will be determined by the Aquatic SWG and consistent with the goal of the WSMP.

[3] Results of the index monitoring activities will be used to determine the scope of future supplementation activities. Index monitoring activities from year 12 through the remainder of the new license term will occur at a frequency of 3-5 years as determined by the Aquatic SWG.

[4] Active-tagged juvenile and adult sturgeon will be tracked to assess emigration, habitat use, and potential spawning locations. This activity will occur in years 3, 4, and 5. Two additional years will be determined by the Aquatic SWG but will likely be consistent with years in which index monitoring activities are implemented.

[5] Tracking of reproductively viable adult sturgeon in combination with deployment of egg collection mats to identify natural production in the Wells Reservoir during 5 separate years over the term of the new license based on flow conditions or other data as determined by the Aquatic SWG.

[6] Phase II activities will consist only of brood stock plan and collection, stocking activities, index monitoring, and potentially natural reproduction assessments for the remainder of the new license.

[7] Adult Passage Evaluations will occur in Year 11 and every 10 years thereafter for the term of the new license.

APPENDIX B

BULL TROUT MANAGEMENT PLAN

3.0 GOALS AND OBJECTIVES

The goal of the BTMP is to identify, monitor and address impacts, if any, on bull trout resulting from the Project in a manner consistent with the USFWS Bull Trout Recovery Plan and the terms of the Section 7 ITS (See Section 4.7). This BTMP is intended to continue the implementation of management activities to protect bull trout during the new license term in a manner consistent with the original WBTMMP (Douglas 2004). The 2004 WBTMMP was developed in coordination with the USFWS, as required by the USFWS Bull Trout BO in association with the HCP. The PMEs presented within the BTMP are designed to meet the following objectives:

Objective 1: Operate the upstream fishways and downstream bypass systems in a manner consistent with the HCP;

Objective 2: Identify any adverse Project-related impacts on adult and sub-adult bull trout passage;

Objective 3: Implement reasonable and appropriate options to modify upstream fishway, downstream bypass, or operations if adverse impacts on bull trout are identified and evaluate effectiveness of these measures;

Objective 4: Periodically monitor for bull trout entrapment or stranding during low Wells Reservoir elevations (similar to WBTMMP);

Objective 5: Participate in the development and implementation of the USFWS Bull Trout Recovery Plan, including information exchange and genetic analysis. Should bull trout be delisted, the Aquatic SWG will re-evaluate the needs and objectives of the BTMP;

Objective 6: Identify any adverse impacts of Project-related hatchery operations on adult and sub-adult bull trout.

This BTMP is intended to be compatible with other bull trout management plans and the UCSRP in the Columbia River mainstem. Furthermore, this management plan is intended to be not inconsistent with other management strategies of federal, state and tribal natural resource management agencies and supportive of designated uses for aquatic life under WAC 173-201A, the Washington state water quality standards.

The schedule for implementation of specific measures within the BTMP is based on the best information available at the time the Plan was developed. As new information becomes available, implementation of each activity may be adjusted through consultation with the Aquatic SWG.

4.0 PROTECTION, MITIGATION AND ENHANCEMENT MEASURES

In order to fulfill the goals and objectives described in Section 3.0, Douglas, in consultation with the Aquatic SWG, will implement PMEs for Project bull trout consistent with the objectives identified in Section 3.0. The measures proposed in this section are intended to serve both as PMEs for bull trout throughout the new license term and to adequately monitor and minimize any incidental take of bull trout consistent with Section 7 of the ESA.

a) Operate the Upstream Fishways and Downstream Bypass Systems in a Manner Consistent with the HCP (Objective 1)

4.a.1 Provide Upstream and Downstream Passage for Adult and Sub-Adult Bull Trout

Douglas will continue to provide upstream passage for adult bull trout through the existing upstream fishways and downstream passage of adult and sub-adult bull trout through the existing downstream bypass system. Both upstream fishway facilities (located on the west and east shores) are operational year around with maintenance occurring on each fishway at different times during the winter to ensure that one upstream fishway is always operational. Maintenance activities on Wells fishways occur during the winter when bull trout have not been observed passing Wells Dam. Operation of the downstream passage facilities for bull trout will be consistent with bypass operations for Plan Species identified in the HCP. Currently the bypass system is operated from April 12 through August 26 of each year. This operating period is consistent with the period of high bull trout and anadromous fish presence at the Project.

4.a.2 Upstream Fishway Counts

Douglas shall continue to conduct video monitoring in the Wells Dam fishways from May 1st through November 15th to count and provide information on the population size of upstream moving bull trout.

4.a.3 Upstream Fishway Operations Criteria

Douglas shall continue to operate the upstream fishway at Wells Dam in accordance with criteria outlined in the HCP.

4.a.4 Bypass Operations Criteria

Douglas shall continue to operate the bypass system at Wells Dam in accordance with criteria outlined in the HCP.

b) Identify Any Adverse Project-related Impacts on Adult and Sub-adult Bull Trout Passage (Objective 2)

4.b.1 Adult Bull Trout Upstream and Downstream Passage Evaluation

Douglas shall continue to monitor upstream and downstream passage and incidental take of adult bull trout through Wells Dam and in the Wells Reservoir through the implementation of a radio-telemetry study. Specifically, in years 5 and 10 of the new license, and continuing every ten years thereafter during the new license term, Douglas will conduct a one-year monitoring program to determine whether Douglas remains in compliance with the ITS. The same study protocols used during past radio-telemetry assessments at Wells Dam (LGL and Douglas PUD 2007) will be employed for these monitoring studies.

If the adult bull trout counts at Wells Dam increases more than two times the existing 5-year average or if there is a significant change in the operation of the fish ladders or hydrocombine, then the Aquatic SWG will determine whether additional years of take monitoring are needed beyond those identified in this section of the BTMP. If the authorized incidental take level is exceeded during any one-year period, Douglas will conduct another monitoring study in the succeeding year. If the authorized incidental take level is exceeded in this second year, Douglas will develop a plan, in consultation with the Aquatic SWG, to address the identified factors contributing to exceedance of the allowable level of incidental take.

4.b.2 Adult Bull Trout Passage Evaluation at Off-Project Collection Facilities

Douglas shall assess upstream and downstream passage and incidental take of adult, migratory bull trout at off-Project (outside of the Project boundary) adult salmon and steelhead brood stock collection facilities associated with the Wells HCP. Specifically, beginning in year one of the new license, Douglas will conduct a one-year radio-telemetry study to assess passage and incidental take at off-Project adult collection facilities (i.e., Twisp weir). Douglas will capture and tag up to 10 adult, migratory bull trout (>400mm) at adult collection facilities and use fixed receiver stations upstream and downstream of collection facilities to examine upstream and downstream passage characteristics and incidental take. Study protocols that have been used during past radio-telemetry assessments at Wells Dam (LGL 2008) will be employed for this assessment.

If negative impacts to passage associated with Off-Project collection facilities are observed or the authorized incidental take level is exceeded during any one-year period, Douglas will conduct another monitoring study in the succeeding year. If negative impacts to passage continue to be observed or the authorized incidental take level is exceeded in this second year, Douglas will develop a plan, in consultation with the Aquatic SWG, to address the identified factors contributing to passage impacts or the exceedance of the allowable level of incidental take.

After year one of the new license, the implementation of this sub-objective will be integrated into the one-year telemetry monitoring program that is to be conducted every ten years (beginning in year 10 of the new license) at Wells Dam as identified in Section 4.2.1. In year 10 of the new license and every 10 years thereafter, bull trout will be captured and tagged only at Wells Dam (Section 4.2.1) since data show that bull trout passing Wells Dam are migrating back into the Methow River watershed (LGL 2008). Through the continued deployment of fixed station monitoring at off-Project adult salmon and steelhead brood stock collection facilities, these tagged bull trout will continue to provide passage and take information in support of this sub-objective throughout the term of the new license.

4.b.3 Sub-Adult Bull Trout Monitoring

While an objective of the BTMP is to identify potential Project impacts on upstream and downstream passage of sub-adult bull trout, Aquatic SWG members (including the USFWS) agree that it is not feasible to assess sub-adult passage because sub-adult bull trout have not been observed at Wells Dam. During the previous six years of bull trout data collection at Wells Dam (BioAnalyst Inc. 2004; LGL 2008), sub-adult bull trout have not been documented passing Wells Dam (based upon fishway video counts and bull trout trapping for radio-telemetry). However, it is expected that through the increased monitoring associated with the implementation of the BTMP that there may be additional encounters with sub-adult bull trout. If at any time during the new license term, sub-adult bull trout are observed passing Wells Dam in significant numbers (>10 per calendar year), the Aquatic SWG will recommend reasonable and appropriate methods for monitoring sub-adult bull trout. Specifically, Douglas may modify counting activities, continue to provide PIT tags and equipment, and facilitate training to enable fish sampling entities to PIT tag sub-adult bull trout when these fish are collected incidentally during certain fish sampling operations. This activity will occur the following year of first observation of sub-adult bull trout (>10 per calendar year) and subsequently as recommended by the Aquatic SWG.

c) Implement Reasonable and Appropriate Measures to Modify the Upstream Fishway and Downstream Bypass if Adverse Impacts on Bull Trout are Identified (Objective 3)

Douglas shall continue to operate the upstream fishway and downstream bypass at Wells Dam in accordance with the HCP. However, if upstream or downstream passage problems for bull trout are identified (as agreed to by the USFWS and Douglas), Douglas will identify and implement, in consultation with the Aquatic SWG and HCP Coordinating Committee, reasonable and appropriate options to modify the upstream fishway, downstream bypass, or operations to reduce the identified impacts to bull trout passage.

d) Investigate Entrapment or Stranding of Bull Trout during Periods of Low Reservoir Elevation (Objective 4)

During the implementation of the WBTMMP from 2004-2008, Douglas, through the use of high resolution bathymetric information, hydraulic and elevation data, and backwater curves, identified potential bull trout entrapment and stranding areas in the Wells Reservoir. Although no stranded bull trout were observed in these areas during the implementation of the WBTMMP, Douglas will continue to investigate potential entrapment or stranding areas for bull trout through periodic monitoring when periods of low reservoir elevation expose identified sites. During the first five years of the new license, Douglas will implement up to five bull trout entrapment/stranding assessments during periods of low reservoir elevation (below 773' MSL). If no incidences of bull trout stranding are observed during the first five years of study, additional assessment will take place every fifth year during the remainder of the license term, unless waived by the Aquatic SWG. If bull trout entrapment and stranding result in take in exceedance of the authorized incidental take level, then reasonable and appropriate measures will be implemented by Douglas, in consultation with the Aquatic SWG, to address the impact.

e) Participate in the Development and Implementation of the USFWS Bull Trout Recovery Plan (Objective 5)

4.e.1 Monitoring Other Aquatic Resource Management Plan Activities and Predator Control Program for Incidental Capture and Take of Bull Trout

Douglas will monitor activities associated with the implementation of other Aquatic Resource Management Plans (white sturgeon, Pacific lamprey, resident fish, aquatic nuisance species, and water quality) and Predator Control Program that may result in the incidental capture and take of bull trout. If the incidental take of bull trout is exceeded due to the implementation of other Aquatic Resource Management Plan activities, then Douglas will develop a plan, in consultation with the Aquatic SWG, to address the identified factors contributing to the exceedance of the allowable level of incidental take. If the incidental take of bull trout is exceeded due to the implementation of the Predator Control Program, then Douglas will develop a plan, in consultation with the HCP Coordinating Committee and the Aquatic SWG, to address the identified factors contributing to the exceedance of the allowable level of incidental take.

4.e.2 Funding Collection of Tissue Samples and Genetic Analysis

Beginning in year 10 of the new license, and continuing every 10 years thereafter for the term of the new license, Douglas will, if recommended by the Aquatic SWG, collect up to 10 adult bull trout tissue samples in the Wells Dam fishway facilities over a period of one year and fund their genetic analysis. Genetic tissue collection will take place concurrent with the implementation of the bull trout radio-telemetry monitoring study. Samples will be submitted to the USFWS Central Washington Field Office in Wenatchee, Washington. Any sub-adult bull trout collected during these activities will also be incorporated into the bull trout genetic analysis.

Beginning in year one of the new license, Douglas will collect up to 10 adult bull trout tissue samples from the Twisp River brood stock collection facility over a period of one year and will fund their genetic analysis. Genetic tissue collection will take place concurrent with the implementation of the Off-Project bull trout radio-telemetry monitoring study.

4.e.3 Information Exchange and Regional Monitoring Efforts

Douglas will continue to participate in information exchanges with other entities conducting bull trout research and regional efforts to explore availability of new monitoring methods and coordination of radio-tag frequencies for bull trout monitoring studies in the Project.

Douglas will make available an informational and educational display at the Wells Dam Visitor Center to promote the conservation and recovery of bull trout in the Upper Columbia River and associated tributary streams.

f) Identify Any Adverse Impacts of Project-related Hatchery Operations on Adult and Sub-adult Bull Trout (Objective 6)

4.f.1 Bull Trout Monitoring During Hatchery Activities

During the term of the new license, Douglas shall monitor hatchery actions (e.g., salmon trapping, sturgeon brood stocking and capture activities) that may encounter adult and sub-adult bull trout for incidental capture and take. Actions to be monitored shall be associated with the Wells Hatchery, the Methow Hatchery, and any future facilities directly funded by Douglas.

If the incidental take of bull trout is exceeded due to Douglas's hatchery actions then Douglas will develop a plan, in consultation with the Aquatic SWG, to address the identified factors contributing to the exceedance of the allowable level of incidental take.

g) USFWS Section 7 Consultation

The PMEs contained within the BTMP were specifically developed, in consultation with the USFWS, to address potential Reasonable and Prudent Measures (RPMs) for the Project relicensing and associated section 7 consultation. All of the FWS's potential RPMs for the Wells Project can be found in Appendix A. Each of these RPMs has been cross referenced with the specific supporting objective and PME (Sections 4.1 - 4.6) found within the BTMP. The purpose of Appendix A is to provide consistency with Douglas PUD's Aquatic Settlement Agreement and the FWS' subsequent section 7 consultation on the relicensing of the Wells Project.

h) Reporting

Douglas will provide a draft annual report to the Aquatic SWG summarizing the previous year's activities undertaken in accordance with the BTMP. The report will document all bull trout activities conducted within the Project and describe activities proposed for the following year.

Furthermore, any decisions, statements of agreement, evaluations, or changes made pursuant to this BTMP will be included in the annual report. If significant activity was not conducted in a given year, Douglas will prepare a memorandum providing an explanation of the circumstances in lieu of the annual report.

5.0

SUB APPENDIX B

CROSS REFERENCED UNITED STATES FISH AND WILDLIFE SERVICE (USFWS) REASONABLE AND PRUDENT MEASURES (RPMS) WITH WELLS BULL TROUT MANAGEMENT PLAN (BTMP) OBJECTIVES AND SUPPORTING PROTECTION, MITIGATION AND ENHANCEMENT MEASURES (PMES)

FWS RPM 1: FERC shall require Douglas PUD, in coordination with the Service, to provide adequate year-round passage conditions for all life history stages of bull trout at all Project facilities.

Associated BTMP Objectives and PMEs:

Objective 1: Operate the upstream fishways and downstream bypass systems in a manner consistent with the HCP (Section 4.1).

PME: Provide Upstream and downstream Passages for Adult and Sub-Adult Bull Trout (Section 4.1.1).

PME: Upstream Fishway Counts (Section 4.1.2).

PME: Upstream Fishway Operations Criteria (Section 4.1.3).

PME: Bypass Operations Criteria (Section 4.1.4).

Objective 2: Identify any adverse Project-related impacts on adult and sub-adult bull trout passage (Section 4.2).

PME: Adult Bull Trout Upstream and Downstream Passage Evaluation (Section 4.2.1).

PME: Adult Bull Trout Passage Evaluation at Off-Project Collection Facilities (Section 4.2.2).

PME: Sub-Adult Bull Trout Monitoring (Section 4.2.3).

Objective 3: Implement reasonable and appropriate options to modify upstream fishway, downstream bypass, or operations if adverse impacts on bull trout are identified and evaluate effectiveness of these measures.

FWS RPM 2. FERC shall require Douglas PUD, in coordination with the Service, to minimize the effect of spillway operations and hydrographic variation to all life history stages of bull trout at all Project facilities.

Associated BTMP Objectives and PMEs:

Objective 1: Operate the upstream fishways and downstream bypass systems in a manner consistent with the HCP (Section 4.1).

> PME: Provide Upstream and downstream Passages for Adult and Sub-Adult Bull Trout (Section 4.1.1).
>
> PME: Upstream Fishway Operations Criteria (Section 4.1.3).
>
> PME: Bypass Operations Criteria (Section 4.1.4).

Objective 3: Implement reasonable and appropriate options to modify upstream fishway, downstream bypass, or operations if adverse impacts on bull trout are identified and evaluate effectiveness of these measures (Section 4.3).

Objective 4: Periodically monitor for bull trout entrapment or stranding during low Wells Reservoir elevations (Section 4.4).

FWS RPM 3. FERC shall require Douglas PUD, in coordination with the Service, to minimize the effects of the Hatchery Supplementation Program to all life stages of bull trout.

Associated BTMP Objectives and PMEs:

Objective 2: Identify any adverse Project-related impacts on adult and sub-adult bull trout passage (Section 4.2).

> PME: Adult Bull Trout Passage Evaluation at Off-Project Collection Facilities (Section 4.2.2).

Objective 6: Identify any adverse impacts of Project-related hatchery operations on adult and sub-adult bull trout.

> PME: Bull Trout Monitoring During Hatchery Activities (Section 4.6.1).

FWS RPM 4. FERC shall require Douglas PUD, in coordination with the Service, to minimize the effects of the other Aquatic Resource Management Plans and Predator Control Program to all life stages of bull trout.

Associated BTMP Objectives and PMEs:

Objective 5: Participate in the development and implementation of the USFWS Bull Trout Recovery Plan, including information exchange and genetic analysis (Section 4.5).

> PME: Monitor other Aquatic Resource Management Plan Activities and Predator Control Program for Incidental Capture and Take of Bull Trout (Section 4.5.1).

FWS RPM 5. FERC shall require Douglas PUD, in coordination with the Service, to design and implement a bull trout monitoring program that will adequately detect and quantify Project impacts. This information will reduce uncertainty regarding Project impacts over the life of the project and shall be used to modify Project operations to the extent practicable to further minimize the manner or extent of take.

Associated BTMP Objectives and PMEs:

Refer to Wells Bull Trout Management Plan in its entirety.

Additional PMEs Proposed in the BTMP (not listed above):

> PME: Funding Collection of Tissue Samples and Genetic Analysis (Section 4.5.2).
> PME: Information Exchange and Regional Monitoring Efforts (section 4.5.3).

APPENDIX C

PACIFIC LAMPREY MANAGEMENT PLAN

3.0 GOALS AND OBJECTIVES

The goal of the PLMP is to implement measures to monitor and address impacts, if any, on Pacific lamprey resulting from the Project during the term of the new license. Douglas, in collaboration with the Aquatic SWG, has agreed to implement several Pacific lamprey PMEs in support of the PLMP. The PMEs presented within the PLMP are designed to meet the following objectives:

Objective 1: Identify and address any adverse Project-related impacts on passage of adult Pacific lamprey;

Objective 2: Identify and address any Project-related impacts on downstream passage and survival, and rearing of juvenile Pacific lamprey;

Objective 3: Participate in the development of regional Pacific lamprey conservation activities. The PLMP is intended to be compatible with other Pacific lamprey management plans in the Columbia River mainstem. Furthermore, the PLMP is intended to be supportive of the HCP, the critical research needs identified by the Columbia River Basin Technical Working Group, the Resident Fish Management Plan, Bull Trout Management Plan, and White Sturgeon Management Plan by continuing to monitor and address ongoing impacts, if any, on Pacific lamprey resulting from Project operations. The PLMP is intended to be not inconsistent with other management strategies of federal, state and tribal natural resource management agencies and supportive of designated uses for aquatic life under Washington state water quality standards found at WAC 173-201A.

The schedule for implementation of specific measures within the PLMP is based on the best information available at the time the Plan was developed. As new information becomes available, implementation of each activity may be adjusted through consultation with the Aquatic SWG.

4.0 PROTECTION, MITIGATION AND ENHANCEMENT MEASURES

Douglas, in consultation with the Aquatic SWG, will implement PMEs for Pacific lamprey in the Project consistent with the goals and objectives identified in Section 3.0. The measures proposed in this section are intended to serve as PMEs for Pacific lamprey throughout the new license term.

a) Adult Pacific Lamprey Passage (Objective 1)

4.a.1 Upstream Fishway Operations Criteria

Douglas shall operate the upstream fishways at Wells Dam in accordance with criteria outlined in the HCP. Based upon information collected from activities conducted in Sections 4.1.3 - 4.1.7, Douglas, in consultation with the Aquatic SWG and the HCP Coordinating Committee, may evaluate various operational and structural modifications to the upstream fishways (e.g., reduction in fishway flows at night) for the benefit of Pacific lamprey passing upstream through Wells Dam during the new license term. If requested, the Aquatic SWG shall develop an Operations Study Plan (OS Plan) that specifically identifies all operational modifications to be evaluated, the proposed monitoring strategy, implementation timeline and criteria for success. The plan shall include a component to evaluate the effects of lamprey modifications on salmon. Upon completion of the evaluation, the Aquatic SWG, in consultation with the HCP Coordinating Committee, will determine whether the proposed modifications should be made permanent, removed, or modified.

4.a.2 Salvage Activities During Ladder Maintenance Dewatering

Douglas shall continue to implement the Adult Fish Passage Plan and associated Adult Ladder Dewatering Plan as required by the HCP. These plans include practices and procedures utilized during fishway dewatering operations to minimize fish presence in the fish ladders and then once dewatered directs Douglas staff to remove stranded fish and safely place them back into the Columbia River. All fish species, including Pacific lamprey that are encountered during dewatering operations are salvaged consistent with the protocol identified in the HCP. Any adult lamprey that are captured during salvage activities will be released upstream of Wells Dam, unless otherwise determined by the Aquatic SWG. Douglas will coordinate salvage activities with the Aquatic SWG and allow for member participation. Douglas will provide a summary of salvage activities in the annual report.

4.a.3 Upstream Fishway Counts and Alternative Passage Routes

Douglas shall continue to conduct annual adult fish passage monitoring in the Wells Dam fishways using the most current technology available, to count and provide information on upstream migrating adult Pacific lamprey 24-hours per day during the adult fishway monitoring

season (May 1- November 15). Based upon information collected from activities conducted in Sections 4.1.6 - 4.1.7, Douglas, in consultation with the Aquatic SWG, may choose to address the use of alternative upstream passage routes around Wells Dam fishway counting stations by adult Pacific lamprey. Potential measures to improve counting accuracy, following consultation and approval of the Aquatic SWG, may include, but may not be limited to, the development of a correction factor based upon data collected during passage evaluations (Sections 4.1.6 and 4.1.7) or utilization of an alternative passage route as a counting facility for adult Pacific lamprey.

4.a.4 Upstream Passage Improvement Literature Review

If additional passage improvement measures are deemed necessary by the Aquatic SWG, then within six months after this determination, Douglas, in consultation with the Aquatic SWG, shall complete a literature review on the effectiveness of upstream passage measures (i.e., lamprey passage systems, plating over diffuser grating, modifications to orifices, rounding sharp edges, fishway operational changes, etc.) implemented at other Columbia and Snake river hydroelectric facilities. The literature review will be conducted in support of activities identified in Section 4.1.5 to help in the selection of reasonable measures that may be implemented to improve adult lamprey passage at Wells Dam.

4.a.5 Fishway Modifications to Improve Upstream Passage

If additional passage improvement measures are deemed necessary by the Aquatic SWG, based upon the results of studies conducted at Wells Dam, then within one year or as soon as practicable following consultation with the Aquatic SWG, Douglas shall identify, design and implement any reasonable upstream passage modifications (structural and/or operational). Passage measures will be designed to improve passage performance by providing safe, effective, and volitional passage for Pacific lamprey through the Wells Dam fishways without negatively impacting the passage performance of adult anadromous salmonids. The following components shall be included in these passage measures:

- Fishway Inspection: Within one year of license issuance or as soon as practicable following consultation with the Aquatic SWG, Douglas shall conduct a fishway inspection with the Aquatic SWG and regional lamprey passage experts to identify and prioritize measures to improve adult lamprey passage and enumeration at Wells Dam. Additional ladder inspections will be conducted at the request of the Aquatic SWG, consistent with winter ladder dewatering operations.
- Entrance Efficiency: Within one year of license issuance or as soon as practicable following consultation with the Aquatic SWG, Douglas shall develop a Lamprey Entrance Efficiency Plan (LEE Plan) for evaluating operational and physical ladder entrance modifications intended to create an environment at the fishway entrances that are conducive to adult lamprey passage without significantly impacting the passage of adult salmonids. These improvements shall be evaluated until compliance, as described below, is attained.

- Diffuser Gratings: Within five years of license issuance or as soon as practicable following consultation with the Aquatic SWG, Douglas shall identify and address, if needed, diffuser gratings within fishways at Wells Dam that adversely affect passage of adult Pacific lamprey.
- Transition Zones: Within five years of license issuance or as soon as practicable following consultation with the Aquatic SWG, Douglas shall identify and address, if needed, transition zones within fishways at Wells Dam that adversely affect passage of adult Pacific lamprey.
- Ladder Traps and Exit Pools: Within five years of license issuance or as soon as practicable following consultation with the Aquatic SWG, Douglas shall identify and address, if needed, lamprey ladder traps and exit pools within fishways at Wells Dam that adversely affect passage of adult Pacific lamprey.

Douglas shall exhibit steady progress, as agreed to by the Aquatic SWG, towards improving adult lamprey passage until performance at Wells Dam is determined to be similar to other mid-Columbia River hydroelectric dams, or until scientifically rigorous standards and evaluation techniques are established by the Lamprey Technical Workgroup, or its successor, and adopted regionally. The Aquatic SWG will then evaluate, and if applicable and appropriate, adopt these standards for use at Wells Dam. If compliance is achieved, Douglas shall only be required to implement activities pursuant to Section 4.1.7 (Periodic Monitoring) for adult Pacific lamprey passage.

4.a.6 Adult Pacific Lamprey Upstream Passage Evaluation

Should upstream passage measures be implemented under Section 4.1.5, then within one year following the implementation of such measures, Douglas, in consultation with the Aquatic SWG, shall conduct a one-year study to monitor the effectiveness of such measures on upstream passage performance of adult Pacific lamprey through Wells Dam. If monitoring results indicate that passage rates at Wells Dam are not similar to passage rates at other mid-Columbia River dams or within standards as described in Section 4.1.5, Douglas, in consultation with the Aquatic SWG, shall develop and implement additional measures to improve upstream Pacific lamprey passage. Measures described in Sections 4.1.5 and 4.1.6 may be repeated, as necessary, until adult passage through Wells Dam is similar to passage rates at other mid-Columbia River hydroelectric dams or within standards as described in Section 4.1.5.

4.a.7 Periodic Monitoring

Once adult Pacific lamprey upstream passage rates at Wells Dam are similar to rates at other mid-Columbia River dams or within standards as described in Section 4.1.5, Douglas, in consultation with the Aquatic SWG, shall periodically monitor adult Pacific lamprey passage performance through Wells Dam fishways to verify the effectiveness of passage improvement measures. Specifically, every ten years after compliance has been achieved, or as determined by the Aquatic SWG, Douglas shall implement a one-year study to verify the effectiveness of the adult fish ladders with respect to adult lamprey passage. If results of the monitoring program

confirm the effectiveness of adult lamprey passage measures and the results indicate that passage rates are still in compliance, then no additional measures are needed. If the results indicate that adult upstream passage rates are out of compliance, then the upstream passage study will be replicated to confirm the results. If the results after two years of study both indicate that passage rates have not been maintained, Douglas, in consultation with the Aquatic SWG, shall develop and implement measures to improve upstream Pacific lamprey passage, if any (see Section 4.1.5).

b) Juvenile Pacific Lamprey Downstream Passage and Survival and Rearing (Objective 2)

4.b.1 Downstream Bypass Operations Criteria

Douglas is required to operate the downstream bypass system at Wells Dam in accordance with criteria outlined in the HCP.

4.b.2 Salvage Activities During Ladder Maintenance Dewatering

Douglas shall continue to conduct salvage activities as required by the HCP's Adult Fish Passage Plan during fishway dewatering operations. All fish species, including Pacific lamprey that are encountered during dewatering operations shall be salvaged consistent with the protocol identified in the HCP. Any juvenile Pacific lamprey that are captured during salvage activities will be released downstream of Wells Dam. Douglas will coordinate salvage activities with the Aquatic SWG and allow for member participation. Douglas will provide a summary of salvage activities in the annual report.

4.b.3 Juvenile Pacific Lamprey Passage and Survival Literature Review

Beginning in year five and every five years thereafter during the new license, Douglas, in consultation with the Aquatic SWG, shall conduct a literature review to summarize available technical information related to juvenile lamprey passage and survival through Columbia and Snake river hydroelectric facilities. This information will be used to assess the feasibility of conducting activities identified in Section 4.2.4.

4.b.4 Juvenile Pacific Lamprey Downstream Passage and Survival Evaluation

Based upon the current state of the science regarding tag technology and methodologies for Pacific lamprey macrophthalmia (Section 2.3), coupled with the challenges of obtaining macrophthalmia in sufficient numbers within the Project to meet sample size requirements for a statistically rigorous study, a juvenile downstream passage and survival evaluation is not feasible at this time.

During the term of the new license, if tag technology and methodologies are developed and field tested and a sufficient source of macrophthalmia in or upstream of the Project are identified to

ensure that a field study will yield statistically rigorous and unbiased results, Douglas, in consultation with the Aquatic SWG, shall implement a one-year juvenile Pacific lamprey downstream passage and survival study.

If statistically valid study results indicate that Project operations have a significant negative impact on the Pacific lamprey population above the Wells Dam, Douglas, in consultation with the Aquatic SWG, shall identify and implement scientifically rigorous and regionally accepted measures (e.g., translocation, artificial production or habitat enhancement), if any, or additional studies to address such impacts. If operational changes are needed to improve passage survival of juvenile lamprey migrants, then those changes need to be coordinate with the HCP Coordinating Committee.

4.b.5 Juvenile Pacific Lamprey Habitat Evaluation

Within three years of the effective date of the new license, Douglas shall implement a one-year study to examine presence and relative abundance of juvenile Pacific lamprey in habitat areas within the Project that may be affected by Project operations. As part of this measure, Douglas shall identify areas of potential juvenile Pacific lamprey habitat for future evaluation. Sampling of these areas will assess presence/absence and relative abundance. Any sampling methodologies used in support of this activity will require coordination with the HCP Coordinating Committee and regulatory approval of the federal and state agencies.

c) Participate in Regional Pacific Lamprey Conservation Activities (Objective 3)

4.c.1 Regional Lamprey Working Groups

Douglas shall participate in Pacific lamprey work groups in order to support regional conservation efforts (e.g., the Pacific Lamprey Technical Work Group and the USFWS Lamprey Conservation Initiative). Activities may include but are not limited to information exchanges with other entities, meeting attendance, and coordination of Douglas' Pacific lamprey activities with other entities conducting lamprey research in the mid-Columbia River. Activities may also include conducting PLMP research within the Project, and sharing that information with other entities.

d) Reporting

Douglas will provide an annual report to the Aquatic SWG summarizing the previous year's activities and proposed activities for the following year undertaken in accordance with the PLMP. The report will document all Pacific lamprey activities conducted within the Project and describe activities proposed for the following year. Furthermore, any decisions, statements of agreement, evaluations, or changes made pursuant to this PLMP will be included in the annual report. If significant activity was not conducted in a given year, Douglas will prepare a memorandum providing an explanation of the circumstances in lieu of the annual report.

5.0

APPENDIX D

RESIDENT FISH MANAGEMENT PLAN

3.0 GOALS AND OBJECTIVES

The goal of the RFMP is to protect and enhance native resident fish populations and habitat in the Project during the term of the new license. Douglas, in collaboration with the Aquatic SWG, has agreed to implement several resident fish PMEs in support of the RFMP. The PMEs presented within the RFMP are designed to meet the following objectives:

Objective 1: Continue to provide additional benefits to resident fishery resources in the Project as a result of continued implementation of the HCP, Predator Control Programs and Doulas PUD's Land Use Policy.

Objective 2: In year 2 and every 10 years thereafter during the new license term, Douglas will conduct a resident fish study to determine the relative abundance of the various resident fish species found within the Project. The study objectives will focus on (1) identifying whether there have been major shifts in the resident fish populations resulting from the implementation of the White Sturgeon, Bull Trout, Pacific Lamprey, and Aquatic Nuisance Species (ANS) Management Plans, and (2) collecting information on resident predator fish populations found within the Wells Reservoir. The results of this study may be used to inform the implementation activities of the other Wells aquatic resource management (ANS, bull trout, Pacific lamprey, and white sturgeon) plans and HCP predator control activities.

Objective 3: If any statistically significant negative changes to native resident fish populations of social, economic, and cultural importance are identified, and are not caused by and cannot be addressed through implementation of other aquatic resource management plans or activities (white sturgeon, Pacific lamprey, bull trout, ANS, HCP, predator control), reasonable and

appropriate implementation measures to address negative changes, if any, will be undertaken by Douglas.

Objective 4: In response to proposed major changes at Wells Dam requiring FERC approval, the Aquatic SWG will assess the potential effects, if any, on Project habitat functionally related to spawning, rearing, and migration of native resident fish, in order to make informed management decisions towards the success of the RFMP. Douglas will implement reasonable and appropriate measures to address any effects on social, economic, and culturally important native species.

This RFMP is intended to be compatible with other resident fish management plans in the Columbia River mainstem. Furthermore, the RFMP is intended to be supportive of the HCP, Bull Trout Management Plan, Pacific Lamprey Management Plan, and White Sturgeon Management Plan by continuing to monitor changes, if necessary, in the resident fish assemblage within the Project. This management plan is intended to be not inconsistent with other management strategies of federal, state and tribal natural resource management agencies and supportive of designated uses for aquatic life under WAC 173-201A, the Washington state water quality standards.

The schedule for implementation of specific measures within the RFMP is based on the best information available at the time the Plan was developed. As new information becomes available, implementation of each activity may be adjusted through consultation with the Aquatic SWG.

4.0 PROTECTION, MITIGATION AND ENHANCEMENT MEASURES

In order to fulfill the goal and objectives described in Section 3.0, Douglas, in consultation with the Aquatic SWG, shall develop and implement a resident fish management program that includes the following PMEs.

a) Implementation Of Programs that Benefit Resident Fish (Objective 1)

4.a.1 HCP Predator Control Programs

Douglas shall continue to conduct annual predator control activities for northern pikeminnow and avian predators as outlined in the HCP (Douglas 2002). Although implementation of this program is targeted at reducing predation on anadromous species covered by the HCP, it is also anticipated to have direct benefits for resident fish species.

4.a.2 Project Shoreline Management and Land Use Policy

Douglas shall continue to implement the Douglas Land Use Policy which requires approval of all land use activities that take place within the Project Boundary. All permit activities such as construction of boat docks, piers, and landscaping within Project Boundary will be subject to review and approval by Douglas only after the applicant has received all other required regulatory permits, in addition to consideration by the HCP signatory parties and permit review by state and federal action agencies. The intent of the review and approval process captured in the Land Use Policy is to protect aquatic habitats and aquatic species that may be affected by proposed land use activities within the Project.

b) Monitoring the Resident Fish Assemblage within the Wells Reservoir (Objective 2)

Douglas shall conduct a resident fish study to determine the relative abundance of the various resident fish species found within the Wells Reservoir. This assessment shall occur in year 2 and every 10 years thereafter during the term of the new license. The study objectives will focus on (1) identifying whether there have been major shifts in the resident fish populations resulting from the implementation of the White Sturgeon, Bull Trout, Pacific Lamprey, and Aquatic Nuisance Species Management Plans, and (2) collecting information on resident predator fish populations found within the Wells Reservoir.

In order to maintain comparative assemblage information over time to inform Project resident fish status and trends, methodology for monitoring activities shall remain consistent with the methods described in Beak (1999). Information collected from these monitoring activities may be used to inform the implementation activities of the other Wells aquatic resource management plans and the HCP predator control activities.

c) Actions to Address Major Shifts in Native Resident Fish Assemblage (Objective 3)

Based upon information collected during the resident fish status and trends monitoring (Section 4.2), if any statistically significant negative changes to native resident fish populations of social, economic, and cultural importance are identified, and are not caused by and cannot be addressed through the implementation of other Aquatic Resource Management Plans or activities (white sturgeon, Pacific lamprey, bull trout, ANS, HCP, predator control), reasonable and appropriate implementation measures to address negative changes, if any, will be undertaken by Douglas.

d) Monitoring in Response to Proposed Changes in Project Operations (Objective 4)

If at any time during the new license term, future changes in Wells Dam operations are proposed that require FERC approval and the Aquatic SWG concludes that either reservoir or tailrace habitat within Project Boundary may be affected with regards to spawning, rearing, and migration (aquatic life designated uses) of native resident fish, an assessment will be implemented to identify potential effects, if any, in order to make informed license decisions. If the results of the assessment identify adverse effects to native resident fish species of social, economic and cultural importance, attributable to such changes in Project operations, then Douglas will consult with the Aquatic SWG to select and implement reasonable and appropriate measures to address such effects.

e) Reporting

Douglas will provide a draft annual report to the Aquatic SWG summarizing the previous year's activities undertaken in accordance with the RFMP. The report will document all native resident fish activities conducted within the Project. Furthermore, any decisions, statements of agreement, evaluations, or changes made pursuant to this RFMP will be included in the annual report. If significant activity was not conducted in a given year, Douglas will prepare a memorandum providing an explanation of the circumstances in lieu of the annual report.

5.0

APPENDIX E

AQUATIC NUISANCE SPECIES MANAGEMENT PLAN

3.0 GOAL AND OBJECTIVES

The goal of the ANSMP is to prevent the introduction and/or spread of aquatic nuisance species in Project waters. Douglas, in collaboration with the Aquatic SWG, has agreed to implement several PMEs in support of the ANSMP. The PMEs presented within the ANSMP are designed to meet the following objectives:

Objective 1: Implement best management practices to prevent Eurasian watermilfoil proliferation during in-water (i.e., construction, maintenance and recreation improvements) improvement activities in the Project.

Objective 2: Continue participation in regional and state efforts to prevent the introduction and spread of aquatic nuisance species. Activities include continued monitoring for the presence of ANS, monitoring bycatch data collected during other aquatic management plan activities and conducting education outreach within the Project.

Objective 3: In response to proposed changes in the Project requiring FERC approval, the Aquatic SWG will assess the potential effects, if any, with respect to the introduction or proliferation of aquatic nuisance species in the Project to inform management decisions to support success of the ANSMP and will implement reasonable and appropriate measures to address any potential effects.

The ANSMP is intended to be compatible with other aquatic nuisance species management plans in the Columbia River mainstem. Furthermore, this management plan is intended to be supportive of the HCP, Bull Trout Management Plan, Pacific Lamprey Management Plan, Resident Fish Management Plan, White Sturgeon Management Plan, and Water Quality Management Plan by continuing to prevent the introduction and/or spread of aquatic nuisance

species in Project waters. The ANSMP is intended to be not inconsistent with other management strategies of federal, state, and tribal natural resource management agencies.

The schedule for implementation of specific measures within the ANSMP is based on the best information available at the time the Plan was developed. As new information becomes available, implementation of each activity may be adjusted through consultation with the Aquatic SWG.

4.0 PROTECTION, MITIGATION AND ENHANCEMENT MEASURES

In order to fulfill the goals and objectives described in Section 3.0, Douglas, in consultation with the Aquatic SWG, has agreed to implement the following PMEs.

a) Implement Best Management Practices During Recreational Improvement Activities (Objective 1)

If at any time during the new license term, Douglas is required to construct, improve or maintain recreation access at boat launches and swim areas and the removal or disturbance of aquatic macrophtye beds that contain Eurasian watermilfoil may potentially occur, Douglas will implement containment efforts utilizing best management practices agreed to by the Aquatic SWG during such activities.

b) Participation in Regional and State ANS Efforts (Objective 2)

4.b.1 Coordination with Regional and State Entities

Douglas shall continue to coordinate with regional and state entities to implement activities in Project waters to monitor for the presence of ANS, specifically zebra and quagga mussels. Activities covered by this objective will consist of monitoring for the presence of zebra and quagga mussels as is identified in Section 2.2.3. If ANS are detected during monitoring activities, Douglas will immediately notify the appropriate regional and state agencies and assist in the implementation of reasonable and appropriate measures to address the ANS presence as is consistent with ANS Management protocols.

Douglas shall participate in information exchanges and regional efforts to coordinate monitoring activities.

4.b.2 Monitor Bycatch from other Project Aquatic Resource Management Activities

Douglas shall monitor bycatch data collected from ongoing Project aquatic resource management activities for aquatic nuisance species presence to support regional and state efforts and the ANSMP. Such ongoing activities may consist of broodstock collection activities at Wells Dam and in associated Project tributaries, the northern pikeminnow removal program, water quality monitoring and any other aquatic resource activities related to implementation of Aquatic Resource Management Plans for bull trout, Pacific lamprey, white sturgeon, and resident fish.

4.b.3 ANS Information and Education

Douglas shall make information regarding the effects of ANS introductions and the importance of prevention available to the public. Such outreach activities may consist of posting signage at Project recreation areas and boat launches.

Douglas shall also provide literature produced by appropriate state entities (Ecology and WDFW) for distribution at the visitor centers of local communities of the Project (Pateros, Brewster, Bridgeport) including Wells Dam.

c) Monitor and Address ANS Effects to Aquatic Communities During Changes in Project Operations (Objective 3)

If at any time during the new license term, future changes in Project operations requiring FERC approval are proposed and the Aquatic SWG concludes that such proposed operations may encourage the introduction or proliferation of aquatic nuisance species within the Project, the Aquatic SWG will assess the potential effects, if any, in order to make informed management decisions.

If the assessment identifies adverse effects to Aquatic Resources due to aquatic nuisance species attributable to changes in Project operations, Douglas shall consult with the Aquatic SWG to select and implement reasonable and appropriate PMEs to address the identified adverse effect(s).

d) Reporting

Douglas will provide a draft annual report to the Aquatic SWG summarizing the previous year's activities undertaken in accordance with the ANSMP. The report will document all ANS activities conducted within the Project. Furthermore, any decisions, statements of agreement, evaluations, or changes made pursuant to this ANSMP will be included in the annual report. If significant activity was not conducted in a given year, Douglas will prepare a memorandum providing an explanation of the circumstances in lieu of the annual report.

Document Content(s)