

***Pelton Round Butte Project
Settlement Agreement***

A P P E N D I X A

***WATER QUALITY CERTIFICATES
and
WATER QUALITY MANAGEMENT AND MONITORING PLAN
for the
PELTON ROUND BUTTE PROJECT – FERC No. 2030***

Appendix A1

Oregon Department of Environmental Quality
Clean Water Act § 401 Certification Conditions

Appendix A2

Confederated Tribes of the Warm Springs Reservation of Oregon,
Water Control Board
Clean Water Act § 401 Certification Conditions

Appendix A3

Water Quality Management and Monitoring Plan (WQMMP)
prepared by
Confederated Tribes of Warm Springs Reservation of Oregon
and
Portland General Electric Company

Appendix A1

**Oregon Department of Environmental Quality
Clean Water Act § 401 Certification Conditions**

Clean Water Act § 401 Certification Conditions
For the
Pelton Round Butte Hydroelectric Project
(FERC No. 2030)
Deschutes River Basin
Jefferson County, Oregon

Upon Federal Energy Regulatory Commission (FERC) issuance of a new license for the Pelton Round Butte Hydroelectric Project, Portland General Electric Company and the Confederated Tribes of the Warm Springs Reservation of Oregon (Joint Applicants) shall comply with the following § 401 conditions:

A. Water Quality Management and Monitoring Plan

Within 90 days of issuance of the §401 certification, the Joint Applicants, in consultation with ODEQ, shall revise the Water Quality Management and Monitoring Plan attached to these certification conditions as Exhibit A and submit the revised plan to ODEQ for approval. The plan as approved by ODEQ is hereafter referred to in these certification conditions as the “WQMMP”. Upon ODEQ approval, the WQMMP becomes a part of the §401 certification for the Project for purposes of any federal license or permit thereafter issued.

B. Selective Water Withdrawal Facility Construction and Operation

By no later than five years from the date of receiving a new FERC license for the Project, the Joint Applicants shall construct, test, and commence operation of the Selective Water Withdrawal (SWW) facility described in the Joint Applicants’ §401 application.

C. Temperature

1. The SWW facility shall be operated in accordance with the Temperature Management Plan (TMP) contained in the WQMMP. The TMP shall identify those measures that the Joint Applicants will undertake to reduce the Project’s contribution to exceedances of water quality standard criteria for temperature.
2. Upon issuance of a new FERC license for the Project, the Joint Applicants shall implement the Water Quality Monitoring Plan (WQMP) contained in the WQMMP. The WQMP shall specify the temperature monitoring reasonably needed to determine (a) whether the temperature criteria continue to be exceeded in waters affected by the Project, (b) the success of the TMP in reducing the Project’s contribution to any continued exceedances of the criteria, and (c) any additional measures that may be needed to reduce the Project’s contribution to exceedances of the criteria.
3. Upon the U.S. Environmental Protection Agency’s final approval or adoption of a Total Maximum Daily Load (TMDL) for temperature in the portion of the Deschutes River affected by the Project, ODEQ may reevaluate the Joint Applicants’ TMP in light of information acquired since the certification of the Project. If additional temperature reduction measures are feasible and necessary to meet a Load Allocation (LA) for the Project under the TMDL (either as a component

of the initial TMDL or any subsequent modification of the TMDL), ODEQ may require submittal of a revised TMP that ensures attainment of the LA, subject to the limits set forth in Chapter 1.0 of the attached Exhibit A and incorporated into the WQMMP. If the TMDL does not include a specific LA for the Project, references to the "LA for the Project" shall refer to the LA that encompasses Project-related thermal contributions to waters affected by the Project.

4. At the end of the period determined by ODEQ to be necessary to implement the TMDL for temperature in waters affected by the Project, ODEQ may:
 - (a) Determine whether the LA for the Project has been achieved.
 - (b) If the LA for the Project has been achieved, the Joint Applicants shall continue to implement the TMP unless, at the Joint Applicants' request, ODEQ approves a modification or termination of the TMP.
 - (c) If the LA for the Project has not been achieved, ODEQ may reevaluate the TMP to determine whether additional measures to reduce the Project's contribution to exceedances of the temperature criteria are necessary and feasible. If additional measures are necessary and feasible, ODEQ may require submittal of a revised TMP that ensures attainment of the LA, subject to the limits set forth in Chapter 1.0 of Exhibit A and incorporated into the WQMMP. Any modification of the TMP that would require the Project to reduce water temperatures beyond what would be required by the LA for the Project shall be effective only upon modification of the LA to reflect the reduced load allocation.
 - (d) If (i) additional measures to reduce the Project's contribution to exceedances of the temperature criteria are necessary to achieve the LA but the measures are not feasible, and (ii) the water quality standard has not been achieved for waters affected by the Project, ODEQ shall verify whether all feasible measures have been undertaken by all required parties within the Deschutes River Basin to achieve the TMDL for waters affected by the Project. If all feasible measures have not been undertaken, ODEQ, in conjunction with designated management agencies, shall take steps to ensure that all feasible measures are undertaken. If all feasible measures have been undertaken, ODEQ shall determine whether designated beneficial uses of waters affected by the Project are adversely affected by the failure to achieve the TMDL. If the designated beneficial uses are not adversely affected by the failure to achieve the TMDL, the Joint Applicants shall continue to implement the TMP unless, at the Joint Applicants' request, ODEQ approves modification or termination of the TMP. If the designated beneficial uses are adversely affected by the failure to achieve the TMDL, ODEQ may modify the TMP to require additional temperature measures, subject to the limits set forth in Chapter 1.0 of Exhibit A and incorporated into the WQMMP. Any modification of the TMP that would require the Project to reduce water temperatures beyond what would be required by the LA for the Project shall be effective only upon modification of the TMDL to reflect the reduced load allocation.
5. Any Project-related instream temperature increase of 0.25°F. or less above the relevant criterion shall not be deemed to contribute to an exceedance of the temperature criterion or to a violation of the temperature water quality standard.
6. ODEQ may make or require reasonable modifications to the WQMP that it considers to be reasonable and feasible if:
 - (a) The WQMP proves inadequate to provide the data needed to make the determinations described in certification condition 2, above; or,
 - (b) Modifications to the TMP require or indicate a need for modification to the WQMP.

7. With the approval of ODEQ, the Joint Applicants may cease implementing the TMP and WQMP or may implement a modified TMP and WQMP. ODEQ may approve termination or modification if ODEQ determines that it will not impair the achievement of any LA for the Project for temperature and will not contribute to the exceedance of the relevant temperature criterion in waters affected by the Project.
8. The Joint Applicants shall implement modifications requested by ODEQ in accordance with these certification conditions and the WQMMP.

D. Dissolved Oxygen

1. The SWW facility shall be operated in accordance with the Dissolved Oxygen Management Plan (DOMP) contained in the WQMMP. The DOMP shall identify those measures that the Joint Applicants will undertake to reduce the Project's contribution to violations of water quality standard criteria for dissolved oxygen.
2. Upon issuance of a new FERC license for the Project, the Joint Applicants shall implement the Water Quality Monitoring Plan (WQMP) contained in the WQMMP. The WQMP shall specify the dissolved oxygen monitoring reasonably needed to determine (a) whether the dissolved oxygen criteria continue to be violated in waters affected by the Project, (b) the success of the DOMP in reducing the Project's contribution to any continued violations of the criteria, and (c) any additional measures that may be needed to reduce the Project's contribution to violations of the criteria.
3. Upon the U.S. Environmental Protection Agency's final approval or adoption of a Total Maximum Daily Load (TMDL) for dissolved oxygen in the portion of the Deschutes River affected by the Project, ODEQ may reevaluate the DOMP in light of information acquired since the certification of the Project. If additional dissolved oxygen improvement measures are feasible and necessary to meet a Load Allocation (LA) for the Project under the TMDL (either as a component of the initial TMDL or any subsequent modification of the TMDL), ODEQ may require submittal of a revised DOMP that ensures attainment of the LA, subject to the limits set forth in Chapter 1.0 of Exhibit A and incorporated into the WQMMP. If the TMDL does not include a specific LA for the Project, references to the "LA for the Project" shall refer to the LA that encompasses Project-related impacts on dissolved oxygen concentrations in waters affected by the Project.
4. At the end of the period determined by ODEQ to be necessary to implement the TMDL for dissolved oxygen in waters affected by the Project, ODEQ may:
 - (a) Determine whether the LA for the Project has been achieved.
 - (b) If the LA for the Project has been achieved, the Joint Applicants shall continue to implement the DOMP unless, at the Joint Applicants' request, ODEQ approves a modification or termination of the DOMP.
 - (c) If the LA for the Project has not been achieved, ODEQ may reevaluate the DOMP to determine whether additional measures to reduce the Project's contribution to exceedances of the dissolved oxygen criteria are necessary and feasible. If additional measures are necessary and feasible, ODEQ may require submittal of a revised DOMP that ensures attainment of the LA, subject to the limits set forth in Chapter 1.0 of Exhibit A and incorporated into the WQMMP. Any modification of the DOMP that would require the Project to increase dissolved oxygen concentrations beyond what would be required by the LA for the Project shall be effective only upon modification of the LA to reflect the reduced load allocation.

- (d) If (i) additional measures to reduce the Project's contribution to violations of the dissolved oxygen criteria are necessary to achieve the LA but the measures are not feasible, and (ii) the water quality standard for dissolved oxygen has not been achieved for waters affected by the Project, ODEQ shall verify whether all feasible measures have been undertaken within the Deschutes River Basin to achieve the LA for waters affected by the Project. If all feasible measures have not been undertaken by all required parties, ODEQ, in conjunction with designated management agencies, shall take steps to ensure that all feasible measures are undertaken. If all feasible measures have been undertaken, ODEQ shall determine whether designated beneficial uses of waters affected by the Project are adversely affected by the failure to achieve the TMDL. If the designated beneficial uses are not adversely affected by the failure to achieve the TMDL, the Joint Applicants shall continue to implement the DOMP unless, at the Joint Applicants' request, ODEQ approves modification or termination of the DOMP. If the designated beneficial uses are adversely affected by the failure to achieve the TMDL, ODEQ may modify the DOMP to require additional dissolved oxygen measures, subject to the limits set forth in Chapter 1.0 of Exhibit A and incorporated into the WQMMP. Any modification of the DOMP that would require the Project to increase dissolved oxygen concentrations beyond what would be required by the LA for the Project shall be effective only upon modification of the TMDL to reflect the reduced load allocation.
5. ODEQ may make or require reasonable modifications to the WQMP that it considers to be reasonable and feasible if:
 - (a) The WQMP proves inadequate to provide the data needed to make the determinations described in certification condition 2, above; or,
 - (b) Modifications to the DOMP require or indicate a need for modification to the WQMP.
6. With the approval of ODEQ, the Joint Applicants may cease implementing the DOMP and WQMP or may implement a modified DOMP and WQMP. ODEQ may approve termination or modification if ODEQ determines that it will not impair the achievement of any LA for the Project for dissolved oxygen and will not contribute to violation of dissolved oxygen criteria in waters affected by the Project.
7. The Joint Applicants shall implement modifications requested by ODEQ in accordance with these certification conditions and the WQMMP.

E. Hydrogen Ion Concentration (pH)

1. The SWW facility shall be operated in accordance with the pH Management Plan (PHMP) contained in the WQMMP. In accordance with Oregon Administrative Rule (OAR) 340-041-0565(2)(d), the PHMP shall identify those measures (including "all practicable measures" in impoundments) that the Joint Applicants will undertake to reduce the Project's contribution to exceedances of the water quality criterion for pH.
2. Upon issuance of a new FERC license for the Project, the Joint Applicants shall implement the Water Quality Monitoring Plan (WQMP) contained in the WQMMP. The WQMP shall specify the pH monitoring reasonably needed to determine (a) whether the pH criterion continue to be exceeded in waters affected by the Project, (b) the success of the PHMP in reducing the Project's contribution to any continued exceedances of the criterion, and (c) any additional measures that may be needed to reduce the Project's contribution to exceedances of the criterion.
3. Upon the U.S. Environmental Protection Agency's final approval or adoption of a Total Maximum Daily Load (TMDL) for pH in waters affected by the Project, ODEQ may reevaluate the PHMP in light of information acquired since the certification of the Project. If additional pH measures are

feasible and necessary to meet a Load Allocation (LA) for the Project under the TMDL (either as a component of the initial TMDL or any subsequent modification of the TMDL), ODEQ may require submittal of a revised PHMP that ensures attainment of the LA, subject to the limits set forth in Chapter 1.0 of Exhibit A and incorporated into the WQMMP. If the TMDL does not include a specific LA for the Project, references to the "LA for the Project" shall refer to the LA that encompasses Project-related pH contributions to waters affected by the Project.

4. At the end of the period determined by ODEQ to be necessary to implement the TMDL for pH in waters affected by the Project, ODEQ may:
 - (a) Determine whether the LA for the Project has been achieved.
 - (b) If the LA for the Project has been achieved, the Joint Applicants shall continue to implement the PHMP unless, at the Joint Applicants' request, ODEQ approves a modification or termination of the PHMP.
 - (c) If the LA for the Project has not been achieved, ODEQ may reevaluate the PHMP to determine whether additional measures to reduce the Project's contribution to exceedances of the pH criterion are necessary and feasible. If additional measures are necessary and feasible, ODEQ may require submittal of a revised PHMP that ensures attainment of the LA, subject to the limits set forth in Chapter 1.0 of Exhibit A and incorporated into the WQMMP. Any modification of the PHMP that would require the Project to reduce pH beyond what would be required by the LA for the Project shall be effective only upon modification of the LA to reflect the reduced load allocation.
 - (d) If (i) additional measures to reduce the Project's contribution to exceedances of the pH criterion are necessary to achieve the LA but the measures are not feasible, and (ii) the pH water quality standard has not been achieved for waters affected by the Project, ODEQ shall verify whether all feasible measures have been undertaken by all required parties within the Deschutes River Basin to achieve the TMDL for waters affected by the Project. If all feasible measures have not been undertaken, ODEQ, in conjunction with designated management agencies, shall take steps to ensure that all feasible measures are undertaken. If all feasible measures have been undertaken, ODEQ shall determine whether designated beneficial uses of waters affected by the Project are adversely affected by the failure to achieve the TMDL. If the designated beneficial uses are not adversely affected by the failure to achieve the TMDL, the Joint Applicants shall continue to implement the PHMP unless, at the Joint Applicants' request, ODEQ approves modification or termination of the PHMP. If the designated beneficial uses are adversely affected by the failure to achieve the TMDL, ODEQ may modify the PHMP to require additional pH measures, subject to the limits set forth in Chapter 1.0 of Exhibit A and incorporated into the WQMMP. Any modification of the PHMP that would require the Project to reduce pH beyond what would be required by the LA for the Project shall be effective only upon modification of the TMDL to reflect the reduced load allocation.
5. ODEQ may make or require reasonable modifications to the WQMP that it considers to be reasonable and feasible if:
 - (a) The WQMP proves inadequate to provide the data needed to make the determinations described in certification condition 2, above; or,
 - (b) Modifications to the PHMP require or indicate a need for modification to the WQMP.
6. With the approval of ODEQ, the Joint Applicants may cease implementing the PHMP and WQMP or may implement a modified PHMP and WQMP. ODEQ may approve termination or modification if ODEQ determines that it will not impair the achievement of any LA for the Project

for pH and will not contribute to the exceedance of the relevant pH criterion in waters affected by the Project.

7. The Joint Applicants shall implement modifications requested by ODEQ in accordance with these certification conditions and the WQMMP.

F. Nuisance Phytoplankton Growth and Aesthetic Conditions

1. The SWW facility shall be operated in accordance with the Nuisance Phytoplankton Growth Management Plan (NPGMP) contained in the WQMMP. The NPGMP shall identify those measures that the Joint Applicants will undertake to reduce the Project's contribution to exceedances of the nuisance phytoplankton growth standard criteria in the event nuisance conditions develop.
2. Upon issuance of a new FERC license for the Project, the Joint Applicants shall implement the Water Quality Monitoring Plan (WQMP) contained in the WQMMP. The WQMP shall specify the nuisance phytoplankton growth monitoring reasonably needed to determine (a) whether the nuisance phytoplankton trigger criterion is exceeded in the Project reservoirs, (b) the success of the NPGMP in reducing the Project's contribution to excessive phytoplankton levels that might lead to nuisance conditions within the Project reservoirs, and (c) any additional measures that may be needed to reduce the Project's contribution to nuisance phytoplankton conditions.
3. Upon the U.S. Environmental Protection Agency's final approval or adoption of a Total Maximum Daily Load (TMDL) for nuisance phytoplankton growth in the portion of the Deschutes River affected by the Project, ODEQ may reevaluate the NPGMP in light of information acquired since the certification of the Project. If additional nuisance phytoplankton growth reduction measures are technically and economically practicable and necessary to meet a Load Allocation (LA) for the Project under the TMDL (either as a component of the initial TMDL or any subsequent modification of the TMDL), ODEQ may require submittal of a revised NPGMP that ensures attainment of the LA, subject to the limits set forth in Chapter 1.0 of Exhibit A and incorporated into the WQMMP. If the TMDL does not include a specific LA for the Project, references to the "LA for the Project" shall refer to the LA that encompasses Project-related impacts to nuisance phytoplankton growth within the Project reservoirs.
4. At the end of the period determined by ODEQ to be necessary to implement the TMDL for nuisance phytoplankton growth in the portion of the Deschutes River affected by the Project, ODEQ may:
 - (a) Determine whether the LA for the Project has been achieved.
 - (b) If the LA for the Project has been achieved, the Joint Applicants shall continue to implement the NPGMP unless, at the Joint Applicants' request, ODEQ approves a modification or termination of the NPGMP.
 - (c) If the LA for the Project has not been achieved, ODEQ may reevaluate the NPGMP to determine whether additional measures to reduce the Project's contribution to exceedances of the nuisance phytoplankton growth criteria are technically and economically practicable and necessary. If additional measures are technically and economically practicable and necessary, ODEQ may require submittal of a revised NPGMP that ensures attainment of the LA, subject to the limits set forth in Chapter 1.0 of Exhibit A and incorporated into the WQMMP. Any modification of the NPGMP that would require the Project to reduce nuisance phytoplankton growth beyond what would be required by the LA for the Project shall be effective only upon modification of the LA to reflect the reduced load allocation.

5. ODEQ may make or require reasonable modifications to the WQMP that it considers to be reasonable and feasible if:
 - (a) The WQMP proves inadequate to provide the data needed to make the determinations described in certification condition 2, above; or,
 - (b) Modifications to the NPGMP require or indicate a need for modification to the WQMP.
6. With the approval of ODEQ, the Joint Applicants may cease implementing the NPGMP and WQMP or may implement a modified NPGMP and WQMP. ODEQ may approve termination or modification if ODEQ determines that it will not impair the achievement of any LA for the Project for nuisance phytoplankton growth and will not contribute to the exceedance of the relevant nuisance phytoplankton growth criteria in the Project reservoirs.
7. The Joint Applicants shall implement modifications requested by ODEQ in accordance with these certification conditions and the WQMMP.

G. Biological Criteria, Deleterious Conditions, and Protection of Designated Beneficial Uses of Salmonid Spawning, Salmonid Rearing, Resident Fish, Aquatic Life, and Wildlife, and other water quality-related state laws for the protection of fish, aquatic life and wildlife:

1. SWW Facility: The Joint Applicants shall operate the Selective Water Withdrawal (SWW) facility in accordance with conditions C, D, and E of this certification.
2. Monitoring: Upon issuance of a new FERC license for the Project, the Joint Applicants shall conduct all monitoring, record keeping, and reporting of all parameters in accordance with the WQMP contained in the WQMMP. The WQMP shall specify monitoring sufficient to determine compliance with § 401 certification requirements for water quality, Project operations, streamflow, ramping rates, and reservoir levels.
3. Spill Management: The Joint Applicants shall maintain and implement current Spill Prevention, Control, and Countermeasure (SPCC) plans for oil and hazardous materials prepared in accordance with the Clean Water Act requirements of 40 CFR 112. These plans shall address all locations at the Project where Project operations may potentially result in a spill of these materials to the reservoirs or the lower Deschutes River. In the event of a spill or release or threatened spill or release to Project reservoirs or the lower Deschutes River, the Joint Applicants shall immediately implement the site's SPCC plans and notify the Oregon Emergency Response System (OERS) at 1-800-452-0311.
4. Ramping Rates in the lower Deschutes River: The Joint Applicants shall operate the project with the following criteria for ramping rates: 0.1 foot/hour and 0.4 foot/day from October 16 to May 14, and 0.05 foot/hour and 0.2 foot/day from May 15 to October 15, except during certain extraordinary conditions. These extraordinary conditions are: (1) flood events; (2) any event that triggers the Project Emergency Action Plan; (3) rapid changes in Project inflows, when the rate of inflow change exceeds the proposed stage change limits; and (4) equipment failures or emergencies at the Reregulating Development. To monitor compliance with this requirement, the Joint Applicants shall record the time and control signal value for all state change instructions at the Reregulating Development and shall report any control signal changes that are greater than the ramping limitations identified above.
5. Reservoir Levels: The Joint Applicants shall operate Lake Billy Chinook to maintain a stable pool level between 1,944 ft. mean sea level (MSL) and 1,945 ft. MSL during the period June 15 to September 15 of each year. If it is forecasted that Lake Billy Chinook will not fill by June 15 of any year, then the Joint Applicants shall immediately notify the state Hydroelectric Application Review Team (HART) and advise of the expected refill date. If the reservoir has not been filled to

normal operating pool level by June 15 of any year, this provision shall not prevent filling if water is available for storage while maintaining the minimum flow. Except during certain extraordinary circumstances described below, the Joint Applicants shall restrict the drawdown of Lake Billy Chinook to a maximum of 20 ft (elevation 1,925 ft MSL) with a target of 10 feet drawdown during normal winter operations; Lake Simtustus to a maximum drawdown limit of elevation of 1,576 ft MSL between June 1 and August 31, and elevation 1,573 ft MSL between September 1 and May 31; and the Reregulating Reservoir to 1,414 ft MSL year-round. Extraordinary circumstances allowing deviation from maximum allowable drawdowns are: (a) flood events in which drawdown is needed for safe passage of flood flows to minimize damage to life and property; (b) unforeseen occurrences in which drawdown is required to complete emergency repairs on Project facilities; (c) periodic scheduled maintenance activities that require drawdown to complete normal repairs on Project facilities (including spillway gates, the intake structure, or other dam structures); and (d) regional power system emergencies. In instances where the Joint Applicants exceed maximum drawdowns, the Joint Applicants shall provide immediate written justification to FERC and notification to HART describing cause and need for the deviation, extent of deviation, and expected timeline for bringing the reservoir(s) back to minimum allowable pool levels. If the pool level of Lake Billy Chinook is projected to be below the summer operating level (minimum elevation 1,944.0 ft MSL) between June 15 and September 15, the Joint Applicants may reduce the flow release to ensure the reservoir reaches the minimum pool elevation of 1944.0 ft MSL. When inflows to the Project under this condition are less than target flows plus 150 cfs, then the flow release at the USGS Madras Gage No. 14092500 shall be defined as the daily inflow less 150 cfs. The referenced target flows are defined in the next condition.

6. Minimum Streamflows: The Joint Applicants shall maintain minimum flows on a weekly basis equal to specified target flows or inflows, whichever is less. The target flows, as measured at the USGS Madras Gage No. 14092500, are as follows: January 4,500 cfs, February 4,500 cfs, March 4,500 cfs, April 4,000 cfs, May 4,000 cfs, June 4,000 cfs, July 4,000 cfs, August 3,500 cfs, September 3,800 cfs, October 3,800 cfs, November 3,800 cfs and December 4,500 cfs. During the period September 16 through November 15, the Joint Applicants shall supplement inflows as necessary to ensure a minimum flow release to the lower river of at least 3,000 cfs, subject to a maximum required supplementation of 200 cfs and cap on required drawdown of Lake Billy Chinook to achieve such supplementation equal to four feet.
7. Run-of-River Operations: The Joint Applicants shall hold river flows below the Reregulating Development to within ± 10 percent of the measured Project inflow under most conditions. Conditions or events where this criteria may not be followed include days with measured inflow in excess of 6,000 cfs when at least one of the following conditions exists: (1) any event that triggers the Project Emergency Action Plan; (2) power emergencies, as defined in the WSCC Minimum Operating Reliability Criteria (March 8, 1999); (3) equipment failures or emergencies at one of the Project dams or powerplants; or (4) reservoir drawdowns are needed for safe passage of anticipated flood flows to minimize damage to life and property. At times when flows are in excess of 6,000 cfs and one or more of the above exception conditions apply, the Joint Applicants shall minimize the variation beyond the $\pm 10\%$ criterion as can be done safely.
8. Stream Gaging: By no later than one year from the date of receiving a new FERC license for the Project, the Joint Applicants shall fund improvements at the existing USGS gaging stations on the Crooked (Gage No. 14087400), Deschutes (Gage No. 14076500) and Metolius (Gage No. 14091500) rivers upstream of the Project. These improvements shall include radio, telephone, or other telemetry systems to provide recording and transmission of hourly stream temperature and streamflow data to the Pelton control room.
9. Fish Passage: The Joint Applicants shall construct, maintain and operate, or shall arrange for the construction, maintenance and operation of such facilities and equipment for fish migration, propagation or conservation consistent with the proposed Fish Passage Plan and amendments thereto. In the event any modifications in the fish facilities are deemed necessary, the Joint Applicants shall cooperate with Oregon Department of Fish and Wildlife (ODFW) in the design of

such modifications or operation of the facilities.

10. Large Wood: All large wood (greater than 20 cm by 3 m) entering Lake Billy Chinook shall be removed by the Joint Applicants and placed into the lower Deschutes River below the Reregulating Dam. Following a flow event that results in the transport of significant amounts of large wood into Lake Billy Chinook, the Joint Applicants shall consult with ODFW and the Confederated Tribes of the Warm Springs Reservation of Oregon (CTWS) Natural Resources Department to obtain specific guidance pertaining to the placement and monitoring of that large wood in the lower Deschutes River below the Project's Reregulating Dam. The Joint Applicants shall obtain all necessary regulatory licenses, permits, or approvals from tribal, federal, state and local authorities prior to large wood placement.

11. Sediment Transport/Spawning Gravel: The Joint Applicants shall perform the following studies with regard to sediment transport and spawning gravel:
 - € Verify the sediment transport model developed by Fassnacht (1998) by placing radio-tagged and/or colored rocks on selected bars in the Deschutes River below the Reregulating Dam. Determine at which flow levels these rocks are mobilized by checking their positions after each flow event greater than 7,000 cfs. The Joint Applicants may submit to ODEQ for approval a proposal for an alternate flow value for commencement of this monitoring pending the results of the AIR process. Buried columns of colored rocks will be utilized to determine the depth of scour at different flow levels.
 - € Resurvey channel cross sections at five locations utilized by Fassnacht (1998). Resurvey these annually for 5 years to determine if there is any active channel change associated with years having high flow events. If no change is detected after 5 years, resurvey them every 10 years, or after events greater than 15,000 cfs.
 - € If monitoring sediment transport and channel change shows significant transport or change at flows lower than predicted by Fassnacht (1998), initiate a program to measure actual bedload transport at different flow levels at the Warm Springs Bridge (US Highway 26).
 - € If monitoring of channel change and measuring bedload shows significant transport at levels significantly below those predicted by the geomorphology study, revisit the sites used by McClure (1998) for particle size measurements and replicate these particle surveys.
 - € Coordinate and lead a study of historical fish counts and spawning data directed toward determination of the cause of anadromous spawning reduction in the Lower Deschutes River from below the Reregulation Dam downstream to the mouth of Shitike Creek. In addition, the Joint Applicants shall conduct a study to determine the quality of gravel habitat for anadromous fish in this river reach. The results of this study shall be used by the Joint Applicants to determine if additional mitigation measures are necessary to improve habitat quality or quantity.

12. Upper Basin Habitat Enhancement and Restoration: The Joint Applicants shall work with private and governmental entities in the Deschutes River Basin to implement cost-effective habitat enhancement and restoration measures to improve the quality of water flowing into the Project. These upper basin measures shall include, but not be limited to, the creation of riparian refugia, as well as improvements such as livestock exclusion, placement of large woody debris, planting of grass, shrubs, trees, and the maintenance and creation of wetlands.

The Joint Applicants shall expend a minimum of \$1.475 million for these upper basin measures over the first 5 years of the new license in accordance with the following table.

Required Mitigation Measure	Minimum Required Expenditure
Improved Riparian Corridor Management	\$ 750,000

Community Habitat Education Activities	25,000
Establishment of Reserves and Refugia	700,000
Total	\$1,475,000

H. Total Dissolved Gas

1. The Joint Applicants shall monitor total dissolved gas at the Reregulating Dam tailrace in accordance with the WQMP contained in the WQMMP.
2. If monitoring of total dissolved gas at the Reregulating Dam tailrace at times of spill indicates noncompliance with the total dissolved gas standard, then the Joint Applicants shall immediately develop a plan and schedule for assessing the problem and developing a remedy. Such plan and schedule shall be submitted to ODEQ for approval within 60 days of identifying the excessive total dissolved gas concentrations via monitoring. Upon approval of the remedial plan by ODEQ, the Joint Applicants shall implement the plan in accordance with the approved schedule.

I. Turbidity

1. The Joint Applicants shall implement the erosion control measures for erosionally-sensitive shoreline areas of the Project reservoirs as proposed in the Final joint Application Amendment, Exhibit E-VII-13.
2. The Joint Applicants shall continue the Shoreline Planting Program at all three Project reservoirs to enhance on-site riparian habitat, as proposed in the Final Joint Application Amendment, Exhibit E-IV-41.
3. The Joint Applicants shall monitor turbidity in accordance with the WQMP contained in the WQMMP.

J. Toxic Substances; Discoloration, Scum, Oily Slick; Aesthetic Conditions; Deleterious Conditions

The Joint Applicants shall maintain and implement current Spill Prevention, Control, and Countermeasure (SPCC) plans for oil, hazardous materials, and non-hazardous materials prepared in accordance with the Clean Water Act requirements of 40 CFR 112. These plans shall address all locations at the Project where Project operations may potentially result in a spill of these materials to the reservoirs or the lower Deschutes River. In the event of a spill or release or threatened spill or release to Project reservoirs or the lower Deschutes River, the Joint Applicants shall immediately implement the site's SPCC plan and notify the Oregon Emergency Response System (OERS) at 1-800-452-0311.

K. Bacteria

The Joint Applicants shall monitor for *E. coli* bacteria in accordance with the WQMP contained in the WQMMP.

L. Cooling Water Discharge Permits

Upon issuance of a new FERC license for the Project, the Joint Applicants shall within 30 days request and file National Pollutant Discharge Elimination System (NPDES) permit applications with ODEQ for cooling water discharges at each of the three powerhouses. This condition will be considered null and void if the Joint Applicants, prior to FERC license issuance, have applied to ODEQ for these NPDES permits.

M. § 401 Certification Compliance Schedules

If any event occurs that is beyond the Joint Applicants' reasonable control and that causes or may cause a delay or deviation in compliance with schedules contained in this § 401 Certification, the Joint Applicants shall immediately notify ODEQ in writing of the cause of delay or deviation and its anticipated duration; the measures that have been or will be taken to prevent or minimize the delay or deviation; and the timetable by which the Joint Applicants propose to carry out such measures. It is the Joint Applicants' responsibility in the written notification to demonstrate to ODEQ's satisfaction that the delay or deviation has been or will be caused by circumstances beyond the control and despite due diligence of the Joint Applicants. If the Joint Applicants so demonstrates, ODEQ shall extend times of performance of related activities under this condition, as appropriate. Circumstances or events beyond the Joint Applicants' control include, but are not limited to, acts of nature, unforeseen strikes, work stoppages, fires, explosion, riot, sabotage, or war. ODEQ may also consider other circumstances or events as beyond the Joint Applicants' control. These other circumstances or events may include, but not be limited to, changes in state statutes; delays in the receipt of necessary approvals for construction design or permits; or delays that ODEQ agrees the Joint Applicants would not have been expected to anticipate. These other circumstances or events will only be considered if they are not due to the actions or inactions of the Joint Applicant. Increased cost of performance or consultant's failure to provide timely reports may not be considered circumstances beyond the Joint Applicants' control.

N. § 401 Certification Modification

ODEQ, in accordance with OAR Chapter 340, Division 48, and, as applicable, 33 USC 1341, may modify this Certification to add, delete, or alter Certification conditions as necessary and feasible to address:

- (a) adverse or potentially adverse Project effects on water quality or designated beneficial uses that did not exist or were not reasonably apparent when this Certification was issued;
- (b) TMDLs (not specifically addressed above in these Certification Conditions);
- (c) changes in water quality standards;
- (d) any failure of Certification conditions to protect water quality or designated beneficial uses as expected when the Certification was issued; or
- (e) any change in the Project or its operations that was not contemplated by this Certification that might adversely affect water quality or designated beneficial uses.

O. Project Changes

The Joint Applicants shall obtain ODEQ review and approval before undertaking any change to the Project that might significantly affect water quality (other than project changes required by or considered in this Certification), including changes to Project structures, operations, and flows.

P. Project Repair or Maintenance

The Joint Applicants shall obtain ODEQ review and approval before undertaking Project repair or maintenance activities that might significantly affect water quality (other than repair or maintenance activities required by or considered in this Certification). ODEQ may, at the Joint Applicants' request, approve specified repair and maintenance activities on a periodic or ongoing basis.

Q. Project Inspection

The Joint Applicants shall allow ODEQ such access as necessary to inspect the Project area and Project records required by this Certification at reasonable times as necessary to monitor compliance with § 401 certification conditions.

R. Posting of § 401 Certification

The Joint Applicants shall post a copy of these certification conditions in a prominent location at the Pelton Powerhouse Control Center.

S. Water Quality Standards Compliance

Notwithstanding the conditions of this certification, no wastes shall be discharged and no activities shall be conducted which will violate state water quality standards.

T. Project Specific Fees

In accordance with Oregon Revised Statutes (ORS) 543.080, the Joint Applicants shall pay a project-specific fee for ODEQ's costs of overseeing implementation of adaptive management provisions of this § 401 certification. The fee shall be \$25,000 (2002 dollars) annually, made payable to "State of Oregon, Department of Environmental Quality", and due on July 1 of each year after issuance of the new FERC license. This fee will not pay ODEQ's costs of participation, before or after issuance of the new FERC license, on the Fisheries Technical Subcommittee established by the Joint Applicants for the Project; such costs shall be paid by Joint Applicants by arrangement separate from this Certification condition. ODEQ shall credit against the fee amounts required under this Certification condition any fee or other compensation paid or payable to ODEQ, directly or through other agencies of the State of Oregon, during the preceding year (July 1 to June 30) for ODEQ's cost of oversight of adaptive management. The fee shall expire 10 years after the first July 1 following issuance of this certification, unless terminated earlier by ODEQ because oversight of adaptive management is no longer necessary. One year before the tenth-anniversary expiration of the fee, or earlier if mutually agreed, ODEQ and the Joint Applicants shall review the need, if any, to modify, extend, or terminate the fee, in accordance with ORS 543.080. The Joint Applicants shall continue to pay any project-specific fee required after such review.

Appendix A2

**Confederated Tribes of the Warm Springs Reservation of
Oregon,
Water Control Board
Clean Water Act § 401 Certification Conditions**

FINAL

Clean Water Act §401 Certification

for the

Application for Certification
Pursuant to Section 401 of the
Federal Clean Water Act

Submitted by:

Portland General Electric
and
The Confederated Tribes of Warm Springs Reservation of Oregon

for the

Federal Energy Regulatory Commissions'

**RELICENSING OF THE PELTON ROUND BUTTE
HYDROELECTRIC PROJECT
ON THE DESCHUTES RIVER, JEFFERSON COUNTY, OREGON
(FERC No. 2030)**

Pursuant to Tribal Ordinances 45 and 80
& Tribal Code Chapters 433 and 479

Prepared by:
**Tribal Environmental Office
Natural Resources Department
Warm Springs, Oregon 97761**

For:

THE WATER CONTROL BOARD
Confederated Tribes of Warm Springs Reservation of Oregon

June 25, 2002

Clean Water Act § 401 Certification

For Portland General Electric and Confederated Tribes of Warm Springs’ Pelton Round Butte Hydroelectric Project on the Deschutes River, Oregon.

Portland General Electric (PGE) and the Confederated Tribes of Warm Springs (Tribes) own and operate the Pelton Round Butte Hydroelectric Project (Project) on the Deschutes River near the City of Madras, Jefferson County, Oregon. The Project is operated under a license issued by the Federal Energy Regulatory Commission (FERC). Because the license expires in the year 2002, PGE and the Tribes (Joint Applicants) on June 25, 2001 applied to FERC for a new major license to continue operating the Project beyond that date (FERC Project No. 2030).

On June 26, 2001, the Joint Applicants applied to the Water Control Board (WCB) of the Confederated Tribes of Warm Springs for water quality certification of the Project pursuant to § 401 of the federal Clean Water Act (CWA) and Tribal Ordinance 80. The Natural Resources Department’s Tribal Environmental Office (TEO) has evaluated the application for consistency with the applicable provisions of Sections 301, 302, 303, 306, and 307 of the CWA; Tribal Ordinances 45, 74, 80, and 81; and the specific water quality provisions for the Deschutes River Basin.

The WCB recognizes that the Joint Applicants have worked diligently to address the water quality issues attributed to this Project and that the applicants are willing to bring the Project into full compliance with the water quality standards of both the State of Oregon and the Confederated Tribes of Warm Springs Reservation of Oregon. In addition, the Joint Applicants are willing to adaptively manage the project through the Water Quality Management and Monitoring Plan and are willing to enter into an agreement with the WCB to facilitate future discussions or actions that may be required to keep the Project in compliance through the term of the License. Therefore, the WCB supports the Applicants request for a 50-year license term for the Pelton-Round Butte Hydroelectric project.

Based on the application, public and agency comments, the Evaluation Report and Findings, and other information submitted to the WCB, and pursuant to § 401 of the Clean Water Act and Tribal Ordinances 45, 74, 80 and 81, the WCB conditionally approves the application for certification. The WCB is reasonably assured that compliance with the certification conditions contained herein will maintain the Project consistent with applicable provisions of Sections 301, 302, 303, 306, and 307 of the Clean Water Act, Tribal water quality standards, and other appropriate requirements of Tribal law related to water quality.

In accordance with Tribal Ordinance 81 and Warm Springs Tribal Code Chapter 433, the Joint Applicants, if dissatisfied with the conditions of this certification, may request a hearing before the WCB or a hearings officer designated by the WCB. Such request for a hearing must be made in writing to the Chairman of the Water Control Board within 20 days of the date of mailing of this certification. Any hearing will be conducted pursuant to the rules of the Tribal Council.

This certification is valid for the Joint Applicants only and is not transferable without prior approval of the Tribal Council or its’ designated representative, in accordance with Ordinance 81, 433.070 (7).

Certification Conditions

1. Protection of beneficial uses of anadromous fish passage, salmonid spawning, salmonid rearing, and resident fish and aquatic life

Upon FERC’s issuance of a new license for the Project, the Joint Applicants shall comply with the following provisions related the Biological Criteria water quality standard and other appropriate requirements of Tribal law:

A. Habitat Improvement Projects

The Joint Applicants will work with private and governmental entities in the Deschutes River Basin to implement cost-effective habitat enhancement and restoration measures to improve the quality of water flowing into, through or below the Project. These measures will include, but not be limited to, the creation of riparian refugia, as well as improvements such as livestock exclusion, placement of large woody debris, planting of grass, shrubs, trees, and the maintenance and creation of wetlands.

The Joint Applicants will expend a minimum of \$1.475 million for these measures over the first 5 years of the new license.

Proposed Mitigation Measure	Proposed Expenditure
Improved Riparian Corridor Management	\$ 750,000
Community Habitat Education Activities	\$ 25,000
Establishment of Reserves and Refugia	\$ 700,000
Total	\$1,475,000

B. Long-Term Water Quality Monitoring and Adaptive Management

The selective water withdrawal facility, to be built as a means to address water quality and fish passage issues, may adversely affect specific water quality parameters such as turbidity and pH. Therefore, the WCB requires a comprehensive water quality monitoring and management plan be implemented to monitor physical, chemical, and biological parameters. Implementation of this plan along with adaptive management will allow rigorous evaluation of progress towards achieving defined measures of success; and utilization of gained knowledge to make necessary modifications through time.

Knowledge gained from the water quality monitoring and management plan will receive broad review from resource managers and the public leading to informed decisions by an Implementation Oversight Committee representing the WCB, DEQ, and the Joint Applicants. The Implementation Oversight Committee will be involved in the administration of the Water Quality Management and Monitoring Plan attached hereto as Appendix A and the Implementation Agreement attached hereto as Appendix B.

The Tribal Council of the Confederated Tribes of Warm Springs has delegated the responsibility and accountability to implement the Policy Statements listed in Tribal Ordinance 80 and 81 to the Water Control Board. Therefore the WCB will be responsible for all decisions requiring the exercise of delegated authority from the Federal Environmental Protection Agency under the Federal Clean Water Act and for implementing Tribal Ordinances 45, 80 and 81.

In the WCB's view the biological criteria also includes consideration of the Project's ongoing impacts on the lower Deschutes River in terms of increased recreational use of the reservoirs, increased development along reservoir shorelines, interception of large woody materials, interception of gravel and finer materials, flow modification (instream flows, ramping rates, and attenuation of flood peaks), disconnection of populations for resident fish species, and prevention of anadromy. This document addresses each of these factors insofar as they affect the support of designated beneficial uses of the lower river as specified by the Tribes in the Reservoirs and the lower Deschutes River. Designated beneficial uses most sensitive to the above-listed impacts include anadromous fish passage, salmonid rearing, salmonid spawning, and resident fish and aquatic life.

The WCB therefore requires the Joint Applicants to implement a long-term monitoring program to address water quality, water quantity, biological parameters and environmental factors related to resource management objectives in the tribal waters affected by the Project. This monitoring program will provide the data necessary to assess whether the Project attains and maintains compliance with the appropriate water quality standards. The information gathered in this program will also be used in the adaptive management of project operations to meet Tribal water quality standards.

The Draft Water Quality Monitoring and Management Plan (Appendix A) will be finalized (including a Quality Assurance and Quality Control Plan) within one year of the date of this Certificate being signed. The Joint Applicants may ask for an extension to this timeframe if this plan cannot be completed due to circumstances beyond their control.

C. Large Wood

The WCB requires all large wood naturally entering the Reservoirs of the Project to be collected and reintroduced below the Project. Mitigation projects to reintroduce large wood back into the lower Deschutes River will be coordinated with all appropriate agencies and approved by the Implementation Oversight Committee. Projects to replace large wood in the lower river will include addition of large wood to the waters in the way of installed structures along the banks to provide for habitat diversity, streambank stability and enhancement of the environment. In addition, some large wood reintroduction projects could be coordinated with normal high flow events to allow the large wood to find its' own "*home*" in the lower river.

Based on the fact that there is a lack of the "ideal quality" of large wood naturally entering the Project due to riparian management activities in the upper watershed, the WCB recommends use of proposed habitat improvement mitigation funds to supplement the large wood naturally entering the reservoirs. Typically this material would be anchored or placed along shorelines or riverbanks to add stability and habitat quality. All applicable licenses, permits and clearances for mitigation or monitoring projects will be obtained prior to any activity taking place in Tribal Waters.

D. Gravel

The reservoirs act as a settling basin not only for gravel-sized sediment but also for finer sand and silt. This may have some adverse effects to the fisheries habitat in the lower river from the Reregulating Dam to the mouth of Shitike Creek. The level of anadromous fish spawning in this area has been documented as being lower over the last 20 years.

As a result, the Joint Applicants will take the following measures with regard to sediment transport and spawning gravel in the Deschutes River downstream of the Project:

1. Verify the sediment transport model developed by Fassnacht (1998) by placing radio- tagged and/or colored rocks on selected bars in the Deschutes River below the Reregulating Dam. Determine at which flow levels these rocks are mobilized by checking their positions after each major flow event. Initiate study at flows greater than 6,500 cfs. As data is collected at this flow level, adjustments can be made to the flow level event that would trigger future data collection needs. Buried columns of colored rocks may be utilized to determine the depth of scour at different flow levels.
2. Resurvey channel cross sections at five locations utilized by Fassnacht (1998). Resurvey these annually for 5 years to determine if there is any active channel change associated with years having high flow events. If no change is detected after 5 years, resurvey them every 5 years, or after events greater than 15,000 cfs.
3. If monitoring sediment transport and channel change shows significant transport and/or change at flows lower than predicted by Fassnacht (1998), initiate a program to measure actual bedload transport at different flow levels at the Warm Springs bridge.
4. If monitoring of channel change and measuring bedload shows significant transport at low levels significantly below those predicted by the geomorphology study, revisit the sites used by McClure (1998) for particle size measurements and replicate these particle surveys.
5. Coordinate and lead a study of historical fish counts and spawning data to determine the cause of anadromous spawning reduction in the Lower Deschutes River from below the Reregulating Dam down to the mouth of Shitike Creek. In addition, the Applicants will conduct a study to determine anadromous gravel habitat quality in the Lower Deschutes River from below the Reregulating Dam down to the mouth of Shitike Creek.

The results of these studies and other appropriate information generated in the FERC re-licensing process will be used to determine if additional mitigation measures (such as gravel augmentation) are necessary to improve habitat quality.

E. Flow Modification

The WCB requires that the Reregulating Reservoir be used to redistribute upstream peaking flows and maintain nearly steady discharge into the Deschutes River, approximately equal to the daily average inflow to Lake Billy Chinook. Project operations will closely mimic inflows (surface and groundwater) so that the project functions as a “run of the river” system under most operational conditions. There will be no more than a 10% variation from Project inflow under most conditions.

SAFETY

Project inflows above 6,000 cfs will be used as a trigger value whereby the project operators will:

1. Evaluate if the Project Emergency Action Plan needs to be implemented.
2. Determine if a power emergency exists (as defined in the Western Systems Coordinating Council Minimum Operating Reliability Criteria (WSCC 1999)).
3. Determine if equipment failures or emergencies exist at one of the Project dams or power plants.
4. Determine reservoir drawdown needs for safe passage of anticipated floods to minimize damage to life and property.

If any of these steps warrant a change to the outflow policy of being within plus or minus 10% of inflow, the Joint Applicants may take whatever steps are necessary to minimize impacts to the Project while protecting public health and safety. Overall direction is to minimize changes to inflow so as to provide the lower river a more normal flow regime.

NORMAL OPERATIONS

These operational requirements will allow for higher peak flows to occur in the Lower River allowing for more natural channel maintenance processes. The Joint Applicants will implement the following:

1. Institute real time flow monitoring at each of the inflows to provide hourly records of flow. This will be required to ensure compliance with the “runoff the river” mandate.
2. Institute real time flow monitoring at the Madras Gauge that will offer better control of flows and a significant enhancement in accurate monitoring of actual stream flows in the lower Deschutes River. This system will enable the project to operate as “run of the river” and comply with other operational guidelines.
3. Project operations will closely mimic inflows (surface and groundwater) so that the project functions as a “run of the river” system under most operational conditions. There will be no more than a 10% variation from Project inflow under most conditions. These changes will allow for higher peak flows to occur in the Lower River allowing for more natural channel maintenance processes.
4. The WCB requires that the Q80 flows for the full period of record for the Madras Gauge (1925-1999) be used as the target “minimum flow” to be released from the project to the Lower Deschutes River. In the event inflows to the project are lower than the target “minimum flow” then inflow volumes must be released to the Lower Deschutes River. The required “minimum flow” may be reduced up to 150 cfs to ensure the refilling of Lake Billy Chinook to reach its normal minimum summer operational level of 1944 feet. The recommended target Q80 “minimum flows” are summarized below by month.

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1924-1999 Q80	3512	4049	4225	4263	4267	4571	4170	3721	3686	3540	3446	3431

5. Seasonal operation of Lake Billy Chinook to allow for no more than a 10 foot draw down during normal winter months with an absolute maximum draw down of 20 feet. Lake Billy Chinook should be filled and at normal operation level of 1944 feet by 1st of April. However, if this is not possible, the reservoir must be at normal operation level of 1944 feet by June 15. The “minimum” level required to be maintained at 1944 feet from June 15 to September 15, for Lake Billy Chinook. During the fall months Lake Billy Chinook should be maintained at the 1944 feet operation level so as to provide continued protection of riparian vegetation and cultural resources.
6. Seasonal operation of Lake Simtustus to allow for a minimum elevation of 1,576 feet from June 1 to August 31 and 1,573 feet elevation from September 1 to May 31.
7. Seasonal operation of the Reregulating Reservoir to allow for a minimum elevation of 1,414 feet year round.
8. Limits on river stage changes below the Reregulating Development will be as follows:
 - a. From May 15 to October 15, hourly stage control limit will be 0.05 feet with a daily stage change control limit of 0.2 feet.
 - b. From October 16 to May 14, hourly stage control limit will be 0.1 feet with a daily stage change control limit of 0.4 feet.

Only during extraordinary or emergency situations can the Joint Applicants deviate from these stage change limits.

F. Fish Passage

The WCB requires the Joint Applicants implement mitigation measures that will effectively enable fish passage and allow for re-connection of harvestable fish populations and anadromy. The WCB requires that these measures do not adversely impact the thriving populations of resident fish species in the Project Reservoirs and the healthy populations of anadromous and resident fish species in the lower Deschutes River.

The Joint Applicants are proposing the construction of a selective water withdrawal facility at Round Butte Dam to address the effects of the Project on water quality and also as a means to enable fish passage. The Joint Applicants have modeled the facility’s impacts on water quality and have provided enough information to show that the water quality effects of the project can be mitigated. Fish passage issues are being studied and results may not be known for many years. If the selective water withdrawal facility on Round Butte Dam will not adequately address fish passage, the Joint Applicants still have the responsibility to implement mitigation measures that will effectively enable fish passage and allow for re-connection of fish populations and anadromy within a reasonable period of time not to exceed 10 years from issuance of FERC license. If current modeling of volitional passage has not been successfully completed after 10 years, alternative methods of re-connecting the fish populations will be developed and approved by the managing agencies having regulatory authority for fisheries in the Deschutes River and the Joint Applicants, and implemented by year 15 of the new license. The Joint Applicants may request that these time frames be adjusted by the WCB after due consultation with appropriate agencies.

The Joint Applicants will continue existing fisheries mitigation programs and evaluation of fish passage projects until the fish passage issue has been resolved.

The WCB is reasonably assured that the discussed biological criteria standard will be met with implementation of mitigation measures outlined above and with the implementation of the Water Quality Monitoring Plan and Management Plan. The Draft Water Quality Monitoring and Management Plan (Appendix A) will be finalized (including a Quality Assurance and Quality Control Plan) within one year of the date of this Certificate being signed. The Joint Applicants may ask for an extension to this timeframe if this plan cannot be completed due to circumstances beyond their control.

2. Dissolved Oxygen Conditions

The Joint Applicants shall comply with the following provisions related to dissolved oxygen levels in the lower Deschutes River.

The WCB requires additional data be collected at appropriate locations to determine the correlation of the Intergravel Dissolved Oxygen (IGDO) and ambient Dissolved Oxygen (DO) for a period of 3 years following issuance of this Certificate. Until the correlation between IGDO and DO has been established and it supports a change in the applicable DO Standard, the WCB will use of the ambient DO levels (11mg/l) as the appropriate standard. The methodology to be used in monitoring IGDO will be approved by the WCB prior to any activity taking place.

The Joint Applicants will begin construction of selective water withdrawal facilities at the Round Butte Dam within 3 years of FERC license being issued and operational to meet water quality standards by end of year five. The Joint Applicants may petition the WCB to adjust these timeframes as appropriate.

Joint Applicants will implement a combination of selective water withdrawal and operational changes to keep the river immediately below the Project within range of the relevant water quality criteria for dissolved oxygen.

The WCB is reasonably assured that the discussed dissolved oxygen criteria will be met with implementation of mitigation measures outlined above and with the implementation of a Water Quality Monitoring and Management Plan. The Draft Water Quality Monitoring and Management Plan (Appendix A) will be finalized (including a Quality Assurance and Quality Control Plan) within one year of the date of this Certificate being signed. The Joint Applicants may ask for an extension to this timeframe if this plan cannot be completed due to circumstances beyond their control.

3. Temperature Management Conditions

- a. Upon FERC's issuance of a new license for the Project, the Joint Applicants shall comply with the following provisions related to water temperatures in the Deschutes River Basin:
 - Joint Applicants will begin construction of selective water withdrawal facilities at the Round Butte Dam within 3 years of FERC license being issued and operational to meet water quality standards by end of year five. The Joint Applicants may petition the WCB to adjust these timeframes as appropriate.
 - Implementation of the Water Quality Monitoring and Management Plan and the Implementation Management Plan will continue to help ensure that project operations do not violate the temperature criteria.
 1. Upon the U.S. Environmental Protection Agency's (EPA's) final approval or adoption of a Total Maximum Daily Load (TMDL) for temperature in the portion of the Tribal waters affected by the Project, the WCB :
 - (a) Will seek, in conjunction with designated management agencies and in accordance with applicable law, other anthropogenic sources within the Deschutes River Basin to implement measures to reduce their contribution to exceedances of the temperature criteria; and
- May reevaluate the Water Quality Monitoring and Management Plan in light of information acquired since the certification of the Project and in light of the temperature modification measures sought to be implemented by other sources in the basin, whether or not such implementation is underway or completed for all other sources. If additional temperature improvement measures are feasible and necessary to meet a load allocation (LA) for the Project under the TMDL (either as a component of the initial TMDL or any subsequent modification of the TMDL), the WCB may require submittal of a revised temperature management plan that insures attainment of the LA, subject to limits set forth

in the Water Quality Monitoring and Management Plan. The Draft Water Quality Monitoring and Management Plan (Appendix A) will be finalized (including a Quality Assurance and Quality Control Plan) within one year of the date of this Certificate being signed. The Joint Applicants may ask for an extension to this timeframe if this plan cannot be completed due to circumstances beyond their control.

2. At the end of the period determined by WCB to be necessary to implement the TMDL for temperature in the portion of the Tribal waters affected by the Project, the WCB may:

(a) Determine whether the TMDL and LA for the Project have been achieved.

(b) If the TMDL and LA for the Project have been achieved, the Joint Applicants shall continue to implement the Temperature Management Plan (TMP) unless, at the Joint Applicant's request, the WCB approves a modification of the Water Quality Monitoring and Management Plan.

(c) If the TMDL or LA for the Project has not been achieved, the WCB may require submittal of a revised temperature management plan that insures attainment of the LA, subject to limits set forth in the Water Quality Monitoring and Management Plan. The Draft Water Quality Monitoring and Management Plan (Appendix A) will be finalized (including a Quality Assurance and Quality Control Plan) within one year of the date of this Certificate being signed. The Joint Applicants may ask for an extension to this timeframe if this plan cannot be completed due to circumstances beyond their control.

3. Any Project-related instream temperature increase of 0.25 °F, or less above the relevant criterion shall not be deemed to contribute to an exceedance of the temperature criterion or to a violation of the temperature water quality standard.

4. pH (hydrogen ion concentration)

Upon FERC's issuance of a new license for the Project, the Joint Applicants shall comply with the following provisions related to pH in the Deschutes River:

The Joint Applicants will implement the construction and operation of the selective water withdrawal facilities. Modeling results have indicated that discharges from the Reregulating Dam will continue to meet the pH criterion, with the possible exception of minor, brief, and isolated instances during the summer months. The exceedances that are predicted are within the error of the model, and the model predictions themselves are conservative in that they are at the upper end of the error range.

Conditions in Lake Billy Chinook will improve and will meet the relevant pH criterion where the associated beneficial uses occur or are expected to occur. Any increases that occur within Lake Simtustus will be minor and will not cause a failure to comply with water quality standards in that reservoir. Moreover, Lake Billy Chinook and Lake Simtustus will continue to fall within the exemption from the pH standard. Specifically, the reservoirs existed as of January 1, 1996, and the exceedance of the pH standard occurs as a result of the impoundment in response to primary productivity supported by nutrients that arise from sources not associated with the impoundment. With the implementation of selective water withdrawal, the Joint Applicants will have taken all practicable measures to bring pH in the impounded waters into compliance with the criterion.

The WCB is reasonably assured that the discussed pH criteria will be met with implementation of mitigation measures outlined above and with the implementation of the Water Quality Monitoring and Management Plan. The Draft Water Quality Monitoring and Management Plan (Appendix A) will be finalized (including a Quality Assurance and Quality Control Plan) within one year of the date of this Certificate being signed. The Joint Applicants may ask for an extension to this timeframe if this plan cannot be completed due to circumstances beyond their control.

- (a) Upon EPA's final approval or adoption of a TMDL for pH in the Deschutes River, the WCB will determine whether the Project needs to provide additional measures to achieve an LA for the Project under the TMDL (either as a component of the initial TMDL or any subsequent modification of the TMDL). If the TMDL does not include a specific LA for the Project, references to the "LA for the Project" shall refer to the LA that encompasses Project contributions to pH exceedances in the Deschutes River below the Project or within the Projects' reservoirs. The determination shall be based on data provided through the Water Quality Monitoring Plan and other relevant information and on an analysis of the extent to which measures employed by or required of other sources within the Deschutes River Basin will result in achievement of the TMDL.
- (4) (b) If the TMDL or LA for pH has not been achieved, the WCB may require submittal of a revised pH management plan that insures attainment of the LA, subject to limits set forth in the Water Quality Monitoring and Management Plan attached to this §401 Certification as Exhibit A.
- (c) The WCB may approve cessation or modification of components of the Water Quality Monitoring Plan if the WCB determines that it will not impair the achievement of any pH TMDL or LA for the Project and will not contribute to the exceedance of the pH criterion in waters affected by the Project. Among other circumstances, the WCB may approve a request for termination of pH monitoring if the Deschutes River does not show pH exceedances for at least three consecutive years.

5. Nuisance Phytoplankton Growth

Although the nuisance phytoplankton standard is exceeded in the surface waters of Lake Billy Chinook and Lake Simtustus, the WCB believes that this condition is not adversely affecting any beneficial use of either impoundment, and that the condition is due to elevated inputs of nutrients from tributaries.

There are no technically and economically practicable strategies to control this condition in the Project itself, although the implementation of selective water withdrawal may tend to reduce measured chlorophyll *a* levels. However, due to unknown effects of the selective withdrawal facility on the chlorophyll *a* levels, the WCB recommends that a reference value for current conditions be established (average chlorophyll *a* levels taken for a period of 5 years). This value will be compared against annual measurements of chlorophyll *a*. If the reference value is exceeded by more than 10% in any given sample, a replication or verification sample will be collected and analyzed within 30 days. If this verification sample also exceeds the reference value by 10%, a survey of water users will be conducted to determine the level of nuisance within the next 30 days.

The WCB is reasonably assured that the discussed nuisance phytoplankton criteria will be met with implementation of mitigation measures outlined above and with the implementation of the Water Quality Monitoring and Management Plan described in Exhibit A. The WCB however does require the Joint Applicants to conduct a survey of users of Project Reservoirs based on criteria listed above to ensure that beneficial uses are not being adversely impacted by nuisance phytoplankton.

6. Total Dissolved Gas

The WCB is reasonably assured that the total dissolved gas standard will be met without special requirements. The WCB will require implementation of the Water Quality Monitoring and Management Plan for DO and Total Dissolved Gas to ensure compliance with this standard.

7. Antidegradation Policy

With the implementation of the mitigation measures listed above, the WCB believes that overall water quality in and below the Project will be improved. As noted earlier, the modeled shift in temperature back toward pre-Project conditions will cause an increase over existing conditions during the first half of the

year; but as this represents a *reversal* of a Project impact, this does not constitute a violation of the antidegradation policy. Current modeling results indicate that DO levels will improve throughout the year. The pH levels in the lower Deschutes River may increase slightly for brief periods of time, but these increases, if they occur, are not predicted to have any adverse impact on water quality or on compliance with other standards, particularly the biological criteria standard. As shown by the recently completed modeling of the lower river, the overall impact on water quality will be beneficial. Accordingly, the WCB believes that there will be a reasonable assurance that Project operations, coupled with the mitigation measures listed above, will comply with the Tribal antidegradation policies. The WCB will require implementation of the Water Quality Monitoring and Management Plan to ensure compliance with the antidegradation policy.

8. Naturally-Occurring Conditions

There are a number of issues related to natural conditions that need to be stressed.

- (a) Water temperatures are in excess of the current bull trout standard upstream of Lake Billy Chinook in the upper Deschutes River, Crooked River, and Metolius River sub-basins. It is evident that temperatures in the streams of the Deschutes River Basin naturally exceed the temperature standard set for bull trout. Groundwater entering the Crooked River at Opal Springs runs at an average temperature of 53°F (11.67 °C) year round according to the Tribal Water Quality Monitoring Program. In the late summer and fall months, groundwater provides the majority of the surface flows entering lake Billy Chinook from the Crooked River and Deschutes River arms. Therefore surface water temperatures are naturally above the standard temperature for bull trout.

The spring fed Metolius River temperatures are also in excess of the current bull trout standard during this period. The water entering Lake Billy Chinook has a hydraulic residence time of approximately 2 months, and since the tributary streams exceed 10°C for nearly this long during the summer, it is unlikely that the temperature in the reservoir could remain below 10°C. Lake Simtustus receives nearly all of its inflow from Lake Billy Chinook, so it, too, is unlikely to remain below 10°C. Therefore, stream temperatures in the lower Deschutes River are unlikely to remain below 10°C.

- (b) Dissolved oxygen concentration in the hypolimnion of Lake Billy Chinook and Lake Simtustus follows a pattern that is typical of highly productive lakes. Biological oxidation of organic matter in the hypolimnion during the period of stratification results in depletion of oxygen. In many productive lakes, DO concentration in the hypolimnion can approach zero. In Lake Billy Chinook, however, this extreme condition is avoided because oxygen-containing water from the tributaries flows into the hypolimnion and provides a source of oxygen. In Lake Simtustus, the flow into the hypolimnion comes from the relatively well-aerated mid-depths of Lake Billy Chinook.
- (c) The pattern of pH seen in the Project reservoirs and in the Deschutes River below the Project is, like the DO pattern in the reservoirs, a function of the high productivity of the water bodies. Intense photosynthetic activity results in elevated pH levels in the water. This occurs in the reservoirs, in the lower Deschutes River, and in the Deschutes and Crooked rivers above the Project. It is a consequence of the relatively high nutrient concentration in the waters of the Project, which acts to increase biological activity resulting in an increase in pH.
- (d) As stated earlier, the Metolius River may be representative of the “natural” nutrient conditions of the streams flowing into the Project reservoirs. The Metolius River is low in nitrogen and relatively high in phosphorus. The Deschutes and Crooked rivers have similar phosphorus concentrations but higher nitrogen concentrations, suggesting that they are being artificially enriched in nitrogen. The resulting high nutrient concentrations support the profuse algal production, which results in the patterns of DO and pH seen in the Project reservoirs and in the lower Deschutes River. Dense algal blooms would occur even in the absence of nitrogen enrichment because species of cyanobacteria (blue-green algae) present in Lake Billy Chinook are capable of meeting their nitrogen needs from the atmosphere in the presence of sufficient phosphorus. It is unlikely that

phosphorus input could be reduced sufficiently to limit the growth of phytoplankton because of the naturally high concentration in inflowing streams.

- (e) The current conditions regarding stream flow entering the Project Area may be deemed to be naturally occurring in that the Project does not regulate legal water rights obtained under State Law nor does the Project generate or create additional water above what nature delivers within the context of the entire Deschutes Basin. Given the current appropriations and their individual supporting water right certificate with corresponding priority date, the WCB is convinced that the most effective, equitable and efficient way to increase stream flow below the project is to work within the legal framework to increase flows entering the Project area. This could include use of market based incentives, land acquisitions, water right transfers and other legal methods to secure more water.
- (f) Increases in surface stream flow entering the Project due to mitigation measures in the upper basin may increase temperature regimes in the reservoirs and ultimately the Lower Deschutes.
- (g) The stability of the Lower Deschutes River is attributable to significant ground water sources within and immediately above the Project area. The lower Deschutes River flows are dominated by groundwater contributions in the late summer and fall months. Diurnal fluctuations are small immediately below the Project mainly due to constant groundwater contributions and present Project Operations. Although both the Deschutes and Crooked Rivers are highly managed in the upper basin, water quality within the Project is moderated to a great extent by the excellent quality and quantity of groundwater entering within the vicinity of the Project.
- (h) Conditions in the Lower Deschutes River do not appear to violate the Tribal Water Temperature Standard.

The WCB believes that naturally-occurring temperatures and nutrient levels may be adversely and indirectly affecting water quality within and downstream of the Project. The WCB has taken these facts into account in making their findings. No additional special requirements, aside from those already listed above, are needed to meet the requirements of the Tribal Water Code.

9. Spill and Waste Management

The Joint Applicants shall implement its Project-specific Oil Spill Prevention, Control and Countermeasure (SPCC) Plan and Waste Management Guidelines. The SPCC Plan and Waste Management Guidelines shall be kept current. In the event of a spill or release or threatened spill or release to Tribal waters, Joint Applicants shall immediately implement the site's SPCC plan, modified SPCC plan or other applicable contingency plan and notify the Oregon Emergency Response System (OERS) at 1-800-452-0311, Tribal Fire & Safety Office at (541) 553-1634 and the Natural Resources Department at (541) 553-2001.

10. § 401 Certification Modification

Subject to the provisions of Ordinance 80 and 81, the WCB may reconsider and add or alter conditions to the §401 Certification as necessary to address changes in conditions or knowledge or to address any failure of conditions herein to protect water quality and beneficial uses. In accordance with the Clean Water Act §401, any added or altered condition shall, so long as it is in effect, become a condition of any federal license or permit that is thereafter issued for the Project. Ordinance 81 provides a mechanism for appropriate changes to the conditions established in this §401 Certificate. With respect to an existing federal license or permit for the Project, the WCB may petition the federal agency to incorporate the added or altered condition in the federal license or permit.

11. Project Changes

The Joint Applicants must obtain the WCB review and approval before undertaking any change to the Project that might significantly affect water quality, including changes to Project operation and flows.

12. Project Repair or Maintenance

The Joint Applicants must obtain the WCB review and approval before undertaking Project repair or maintenance activities that might significantly affect water quality. The WCB may, at Joint Applicants' request, provide prior approval of such repair and maintenance activities on a periodic or ongoing basis.

13. Costs for TEO and WCB Oversight

In accordance with Tribal Ordinance 80 and 81, Joint Applicants shall pay a project-specific fee for the WCB and the TEO's costs of overseeing implementation of this §401 Certification. The fee shall be \$24,000 annually (2002 dollars indexed to the Federal Inflation Rate) made payable to "Tribal Environmental Office, Natural Resource Department" and due on July 1 of each year after issuance of this Certificate. If this fee amount is found to be in excess of needs or inadequate to cover costs incurred, the Water Control Board may change the annual fee charged after consultation with the Joint Applicants.

14. Project Inspection

The Joint Applicants shall allow the WCB and TEO or other designated representative such access as necessary to inspect the Project area at reasonable times to monitor compliance with certification conditions.

15. Notification

The Joint Applicants will notify the WCB and the TEO of all future changes in the project or operation of the project.

16. Posting of Certification

A copy of this certification shall be prominently posted within the project powerhouse.

The Joint Applicants have provided reasonable assurance that the Project will be managed and operated in a manner that will not violate applicable tribal water quality standards. The Water Control Board as the delegated authority of Tribal Council of the Confederated Tribes of the Warm Springs Reservation of Oregon is reasonably assured that compliance with the certification conditions contained herein will maintain the Project consistent with applicable provisions of Sections 301, 302, 303, 306, and 307 of the Federal Clean Water Act, Tribal water quality standards, and other appropriate requirements of Tribal law related to water quality.

Based on the application, public and agency comments, the Evaluation Report and Findings, and other information submitted to the WCB, and pursuant to § 401 of the federal Clean Water Act and Tribal Ordinances 45, 74, 80 and 81, the WCB hereby conditionally approves the application for certification.

Appendix A3

Water Quality Management and Monitoring Plan (WQMMP)

prepared by

Confederated Tribes of Warm Springs Reservation of Oregon

and

Portland General Electric Company

EXHIBIT A (WQMMP)

July 2004

PELTON ROUND BUTTE PROJECT WATER QUALITY MANAGEMENT AND MONITORING PLAN

PREPARED BY:

**Confederated Tribes of Warm Springs Reservation of Oregon
and
Portland General Electric Company**

1.0 INTRODUCTION AND BACKGROUND

The management and monitoring plans outlined in this document describe procedures that will be employed by Portland General Electric Company and the Confederated Tribes of the Warm Springs Reservation of Oregon (the Joint Applicants) to satisfy the requirements of the 401 Water Quality Certification for the Pelton Round Butte Hydroelectric Project (PRB Project or Project) (FERC # 2030). The Pelton Round Butte Project (PRB Project) consists of a three-dam complex on the Deschutes River west of Madras, Oregon. A complete description of the Project is available in the Final Joint Application Amendment to the Federal Energy Regulatory Commission (FERC) dated June 2001 (PGE and CTWS 2001).

The earliest water quality work on Lake Billy Chinook was conducted during 1964-65 (Mullarkey 1967). Later, as part of relicensing, E&S Environmental Chemistry was contracted to conduct a limnological study from 1994 through 1996 (Raymond et al. 1997). It was more extensive and included sampling sites below Lake Billy Chinook. At the completion of this study, it was decided to continue monitoring water temperatures at most of the same sites to support other aquatic studies being conducted during the relicensing process (Lewis 1997). Beginning in 1998, other water quality parameters were also collected at the same sites. Water temperatures in the lower Deschutes River were investigated at about the same time by assessing the effects of the Project based on historical data and modeling (Huntington et al. 1999). Additional studies in the lower Deschutes River were conducted during 1998-99 to better understand the processes affecting water quality in the lower river (Eilers et al. 2000). In 2000, a subset of the water temperature recorders used for the lower river studies was replaced so that long-term monitoring could continue.

To evaluate the effects of surface withdrawal from Lake Billy Chinook, hydrodynamic and water quality modeling was initiated (Yang et al. 2000). Modeling results indicate the potential for modifying water currents in Lake Billy Chinook, moving the annual temperature patterns of the water released from the Project's Reregulating Dam back towards pre-Project patterns and improving water quality in the Project's reservoirs and in the lower Deschutes River (PGE and CTWS 2001).

As a major mitigation measure for the new license period, the Joint Applicants propose to reintroduce anadromous fish upstream of the Project. To enhance surface currents in Lake Billy Chinook, the reservoir upstream of Round Butte Dam, the Joint Applicants propose to construct a selective water withdrawal facility (SWW) at the existing Round Butte Dam intake tower. This new facility will allow water withdrawal from both the surface (warmer epilimnion) and the bottom (cooler hypolimnion) of the reservoir. This new facility will meet two significant purposes:

- Help the Project meet temperature and water quality goals and standards in the lower Deschutes River and Project reservoirs, and,

- Allow the withdrawal of surface waters during salmonid smolt migration periods to facilitate the capture of downstream emigrating smolts from Lake Billy Chinook in support of the anadromous fish reintroduction goal

The following plans provide information regarding ODEQ and CTWS WCB standards and goals, their application to the Project, facilities for compliance and the management approach, monitoring, adaptive management strategies, and reporting of monitoring results and management operations. Schedule aspects of this plan are set relative to the completion of the selective water withdrawal facilities and the implementation of selective withdrawal operations at the Project. Construction related schedule information can be found in the Pelton Round Butte Fish Passage Plan and § 401 certification.

Various management activities that will be conducted pursuant to this plan, or pursuant to the terms and conditions of the new FERC license, may require the Joint Applicants to conduct instream work. The Joint Applicants will obtain any permits, such as a Corps 404 permit and associated 401 certification, or a CTWS Hydrologic Project Application permit, which may be required prior to conducting such activities.

1.1 Adaptive Management Considerations

Because operation of the selective withdrawal facility has the potential to affect numerous water quality parameters, as well as fish passage success, changes in the operation of the selective withdrawal facility must consider all possible impacts, not merely a single water quality parameter. In addition, actual impacts to water quality and currents will not be known with certainty until the selective withdrawal facility is constructed, operated, and monitored, highlighting the need for an adaptive management approach to ensure compliance with water quality standards.

For the purpose of satisfying water quality standards for temperature, DO, pH, and nuisance phytoplankton, as well as ensuring downstream fish passage, and implementing the adaptive management requirements of the § 401 certification and the Section 401 Implementation Agreement, the Joint Applicants shall operate the selective withdrawal facility pursuant to general adaptive management considerations. These considerations are based on the staged implementation of selective withdrawal, with the selective withdrawal facilities being constructed in advance of the fish screening facilities.

Prior to the date on which fish screening devices on the selective withdrawal facility have been installed and tested, and determined by the Interagency Fisheries Technical Subcommittee (FTS) to be operational, DEQ or WCB may request the Joint Applicants to modify the blend of water being discharged from the selective withdrawal facility (in addition to any modifications made by the Joint Applicants, without DEQ or WCB request being necessary, pursuant to Section 3.7, 4.6, or 5.6) , subject to the following limitations:

- (a) The blend discharged is within the range set forth in Table 2.1;
- (b) The FTS has been provided a reasonable opportunity to review the proposed blend; and
- (c) Such modification would not require the Joint Applicants to make any significant capital expenditures to structurally modify the SWW facility.

After the date on which fish screening devices on the selective withdrawal facility have been determined by the FTS to be operational, DEQ or WCB may request the Joint Applicants to modify the blend of water being discharged from the selective withdrawal facility (in addition to any modifications made by the Joint Applicants, without DEQ or WCB request being necessary, pursuant to Section 3.7, 4.6, or 5.6), subject to the following limitations:

- (a) The blend discharged is within the range set forth in Table 2.1,
- (b) Blend changes based on water quality concerns may be requested no more than two times per year (in addition to any modifications made by the Joint Applicants pursuant to Section 3.7),
- (c) The FTS has been provided a reasonable opportunity to review the effects of the request on all water quality and fish passage parameters over the entire year, and
- (d) Such modification would not require the Joint Applicants to make any significant capital expenditures to structurally modify the SWW.

After the fish screening devices on the selective withdrawal facility have been operational for five years, DEQ or WCB may request that the Joint Applicants modify the blend of water being discharged from the selective withdrawal facility such that the blend discharged is *outside* the range set forth in Table 2.1, provided the proposed modification is described in a written proposal submitted to the Joint Applicants and the FTS at least two months prior to the date on which the proposal is intended to be implemented. If the Joint Applicants or the FTS do not concur with a modification requested by DEQ or WCB, or if the modification requested by DEQ or WCB would require the Joint Applicants to make significant capital expenditures to structurally modify the selective withdrawal facility, and the Joint Applicants in either event elect not to implement the modification requested by DEQ or WCB, then DEQ, WCB and the Joint Applicants may exercise their reserved rights, remedies, and defenses regarding implementation of the modification.

2.0 WATER TEMPERATURE MANAGEMENT PLAN

2.1 ODEQ and CTWS temperature standards

The applicable ODEQ and Tribal water quality standards can be found in OAR 340-41 and Tribal Ordinance 80, respectively.

2.2 Application to the Pelton Round Butte Hydroelectric Project

As required by the Federal Clean Water Act, the temperature standard that must be satisfied for the lower Deschutes River below the Project's Reregulating Dam is the most stringent applicable standard, the State's bull trout standard. The DEQ and the WCB interpret the temperature standard to restrict the PRB Project from warming the water discharged into the lower Deschutes River below the Reregulating Dam more than 0.25 °F over what would occur at that location in the river if the PRB Project were not in place, when surface waters exceed 50°F (10°C) or when federally listed Threatened and Endangered species use the river.

2.3 Facilities for compliance

A selective withdrawal facility will be constructed at the existing turbine intake at Round Butte Dam. The facility, which will have intake gates at near the reservoir's surface and at depth, will be operated to blend water from the two intakes when necessary to meet the applicable ODEQ and CTWS temperature standards in the lower Deschutes River and reduce overall temperatures in Project reservoirs.

2.4 Approach to temperature management

To meet the ODEQ and WCB temperature standards, the amount of colder, hypolimnetic water will be increased to ensure that the Project does not measurably increase the temperature over what would occur naturally at the Madras USGS Gauge (RM 100) if the Project were not present. Based on the results of a series of hydrodynamic and temperature models (Huntington et al. 1999; Yang et al. 2000), and an iterative model-run sequence, the percentages of surface and bottom withdrawals listed in Table 2.1 (referred to during development as Blends 13 and 16) will result in compliance with the temperature standard throughout the year at the Reregulating Dam based on flow and temperature data from the 1995 water-year (Khangaonkar 2001). Modeling results (Khangaonkar 2001) indicate that management of water withdrawal within the ranges shown in Table 2.1 result in lower temperatures than those that would occur if the Project were not present (Figures 2.1 and 2.2).

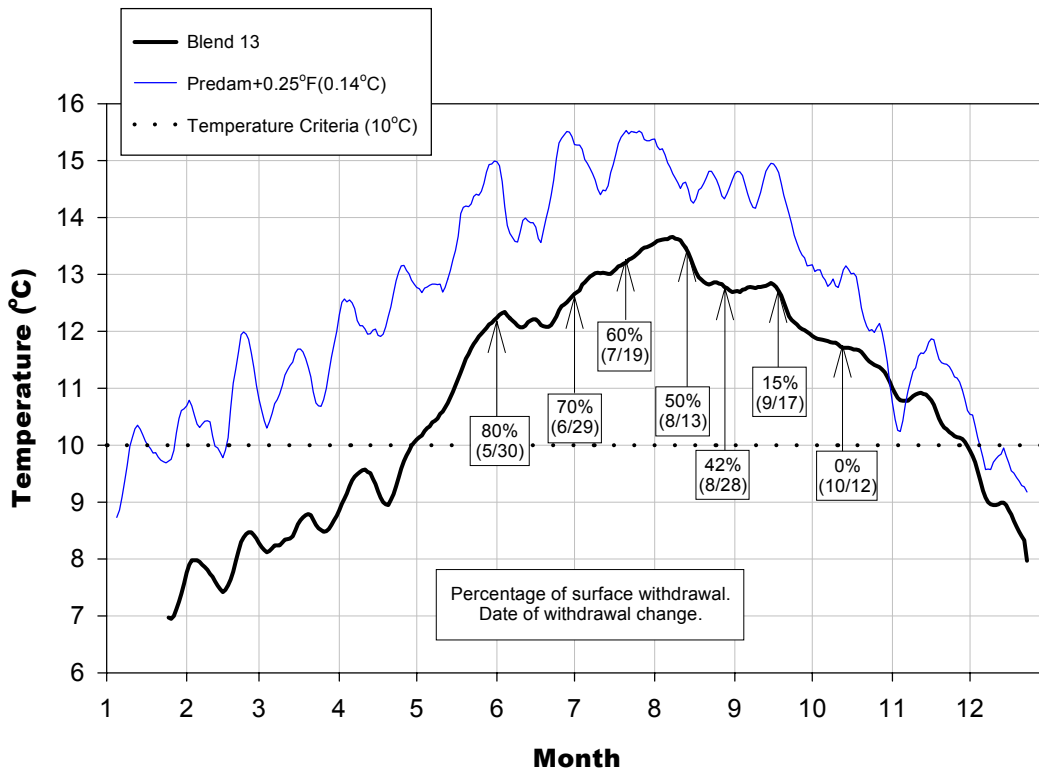
Table 2.1. Range of surface and bottom withdrawals (%) from Lake Billy Chinook that will achieve compliance with the bull trout temperature standard in the lower Deschutes River at the Reregulating Dam. The actual blend of surface and bottom withdrawal at a given time will fall within the range of percent values in the appropriate row (i.e., somewhere within the limits of Blends 13 and 16).

Month	Surface Withdrawal (%)		Deep Withdrawal (%)	
	Blend 13	Blend 16	Blend 13	Blend 16
Jan	100	100	0	0
Feb	100	100	0	0
Mar	100	100	0	0
Apr	100	100	0	0
May	100	100	0	0
Jun	80	100	20	0
01 Jul - 18 Jul	70	85	30	15
19 Jul - 31 Jul	60	85	40	15
01 Aug - 13 Aug	60	70	40	30
14 Aug - 28 Aug	50	70	50	30
29 Aug - 17 Sep	42	60	58	40
18 Sep – 30 Sep	15	60	85	40
01 Oct - 12 Oct	15	50	85	50
13 Oct - 31 Oct	0	25	100	75
November	0	50	100	50
December	0	100	100	0

When the mean 7-day maximum calculated temperature for the combined inflows to Lake Billy Chinook reaches 8 °C the discharge temperature at the Reregulating Dam will be closely monitored. If needed, the percentage of water discharged from the lower or hypolimnic outlet in Lake Billy Chinook will be increased to maintain outflow temperatures no greater than 0.25 °F of temperatures that would occur if the Project were not present. In the fall, as inflow temperatures naturally decrease, the percentage of deep water will be decreased. Allowing more surface withdrawal during fall will aid surface attraction during the downstream emigration of fall-migrating juvenile spring chinook salmon (Lindsay et al. 1989).

The Joint Applicants will work with ODEQ and WCB to determine how to select a withdrawal blend within the limits specified in Table 2.1. As discussed in Section 2.7, adjustments to the withdrawal blend will be made automatically by the Joint Applicants to ensure that discharges meet the applicable temperature standard. In addition, DEQ and WCB will have the right, within limits specified in the Section 401 Implementation Agreement, to request further modification of the blend.

Based on modeling, the expectation is that the withdrawal of warmer surface waters—primarily from the Deschutes and Crooked Rivers—during winter and spring will allow the accumulation of colder and denser Metolius River water, and lead to a colder mean reservoir temperature as summer approaches, which would improve the temperature regime in Lake Billy Chinook for reservoir dwelling salmonids.

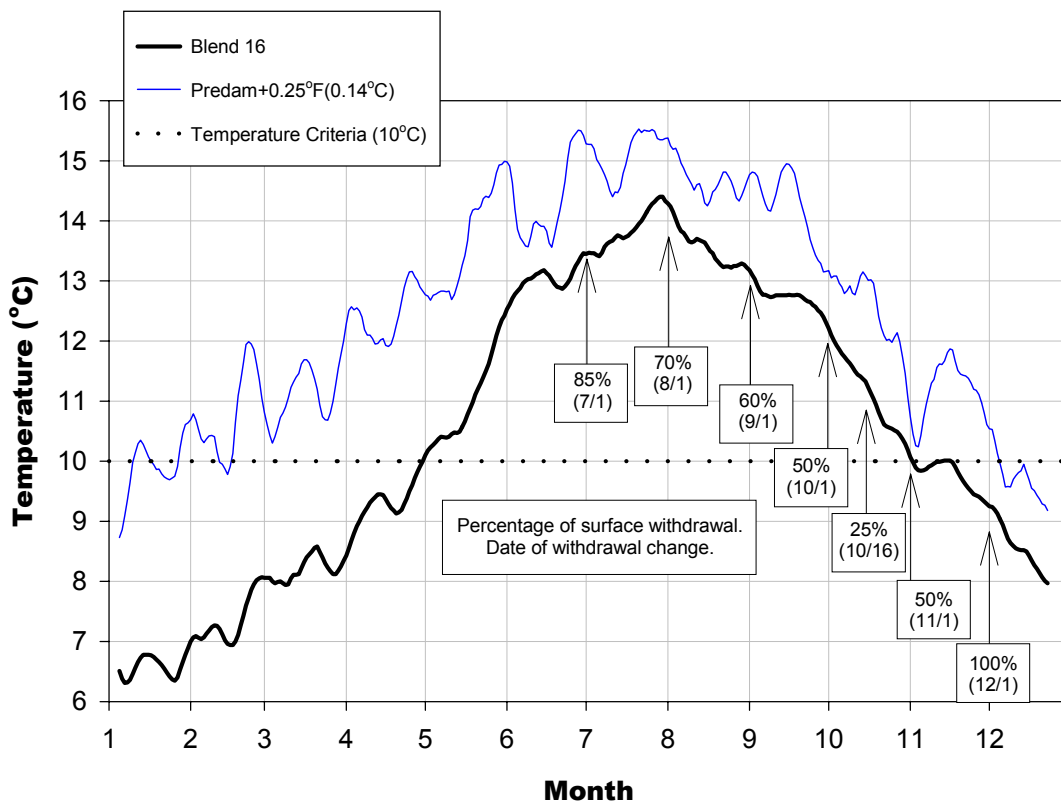


Figures 2.1. Water temperatures under Blend 13.

Temperatures within the Project impoundments currently comply with applicable temperature standards in that the bull trout standard of 50°F (10°C) is met at the depths where bull trout occur or would be expected to occur. The model run sequences that have been performed to date indicate that selective withdrawal pursuant to Blend 13 or Blend 16, as shown in Table 2.1, will improve temperature conditions within the Project impoundments, increasing the volume of water in compliance with the bull trout standard. As described below, long-term monitoring will provide data to determine that the Joint Applicants continue to comply with this standard.

2.5 Calculating outflow temperatures

Based on measurement of inflow temperatures, a regression equation (Huntington et al. 1999) will be used to calculate the seven-day moving average of the daily maximum temperature at the location of the Reregulating Dam if the Project were not in place. The method used to derive the estimate of daily maximum temperature at the Reregulating Dam will account for the influence of groundwater inflow in the Project area on water temperature at the discharge point.



Figures 2.2. Water temperatures under the Blend 16.

2.6 Temperature monitoring

Temperature monitoring will be conducted at numerous sites as identified in Table 6.1. This monitoring will be performed to achieve multiple objectives over the life of the license. As data are collected and analyzed, specific temperature monitoring sites may be added or eliminated in accordance with the 401 certifications. Temperature monitors will be installed at the USGS flow gages on the three major tributaries to Lake Billy Chinook as part of the gaging station upgrades. These monitors will allow recording and transmission of real-time (hourly) temperature of each of the major tributaries and will be used for calculating seven-day moving averages of daily maximum temperature entering the Project. These data will also be used to calculate/model expected temperature and temperature gain at the Reregulating Dam if the Project were not in place (natural warming).

Real-time temperature measurements will also be collected at the Madras USGS Gauge (RM 100) in the lower Deschutes River, and will be used to determine compliance with the calculated temperature target at the Reregulating Dam. To eventually improve temperature management operations, a continuous temperature monitor will also be installed in the Round Butte Dam tailrace (see Section 2.7, *Temperature management operations*). Temperature monitors will also be placed at multiple depths within Lake Billy Chinook and Lake Simtustus to evaluate how

reservoir temperatures are impacted by future operations and management of the selective water withdrawal facility.

2.7 Temperature management operations

It is anticipated that the surface intake will be used exclusively from January through May or June, depending upon the actual blending regime (Table 2.1). Starting in June or July, or when inflow temperatures reach 8 °C, mean maximum temperature of the inflow will be closely monitored and compared to a chart of modeled temperature targets at the Reregulating Dam (Huntington et al. 1999; Yang et al. 2000). If the temperature approaches the maximum limit, the percentage of deep water discharged will be adjusted upward. The Joint Applicants would make adjustments automatically and provide a follow-up report to ODEQ and the CTWS WCB as outlined in Section 2.9. All adjustments would fall within the ranges established in Table 2.1. However, unless it appears that the standard will be exceeded, adjustment of the intake gates for other purposes will be limited to twice per month, near the first and the 15th of each month. Any additional adjustments will be implemented subject to the limitations described in Section 1.1, which addresses overarching adaptive management concerns.

Current understanding of the relationship between inflow temperatures, Round Butte Dam discharge temperatures, and the Reregulating Dam discharge temperatures is based on recent modeling efforts (Huntington et al. 1999; Yang et al. 2000). Over time, it is expected that Project operators will further refine the correlation between air temperature, wind, and other environmental variables and discharge temperature at the Reregulating Dam as compared to Round Butte Dam, and as compared to conditions that would exist if the Project were not present. This correlation would be used to provide more rapid feedback and quick adjustment capabilities during periods when temperatures are warming rapidly. There is approximately a three-day delay from when water is discharged through the Round Butte Dam before it is discharged into the lower Deschutes River at the Reregulating Dam. Being able to more accurately determine the relation between the change in temperatures in the tailrace at Round Butte Dam and the change in temperature of water entering the lower Deschutes River will allow for quicker and more accurate adjustments.

2.8 Reporting

Reports will be produced in two forms. Updates on water temperatures and changes in operation of the selective withdrawal facility will be provided by email monthly—or more often if temperature changes prompt a change in the mix of surface and bottom discharges during a month. These email reports will include attached data files that will include the water temperature data gathered during the time period. In addition, an annual report will be produced that will include graphs of temperature data, timing and mix of surface and bottom water discharges, and a discussion of temperature control activities. This annual report will be submitted to ODEQ, the CTWS WCB, and the FTS each February and presented at the annual Fisheries Technical Workshop.

3.0 DISSOLVED OXYGEN MANAGEMENT PLAN

3.1 ODEQ and CTWS dissolved oxygen standards

The applicable ODEQ and Tribal water quality standards can be found in OAR 340-41 and Tribal Ordinance 80, respectively.

3.2 Application to the Pelton Round Butte Hydroelectric Project

The ODEQ and CTWS salmonid spawning DO criterion will apply to the Deschutes River downstream of the PRB Project during the periods of salmonid spawning and incubation, which in the lower Deschutes River is the entire year.

Based on water quality modeling (Khangaonkar 2001), the percentages of surface and bottom withdrawals listed in Table 2.1 would result in ambient DO concentrations in the Project discharge in excess of 11.0 mg/L during most of the year. During the 3.5 months (approximately 1 August through 15 November) when modeling indicates that DO concentrations would fall below 11.0 mg/L, they would still exceed 9.0 mg/L.

The Joint Applicants acknowledge that the 11.0 mg/L criterion is applicable in light of currently available information. The determination of whether the IGDO criterion will be met under selective withdrawal conditions cannot be made before selective withdrawal has been implemented and DO concentrations downstream reflect the actual blends being discharged. Accordingly, until post selective withdrawal IGDO monitoring demonstrates whether the 9.0 mg/L alternate criterion is applicable, the 11.0 mg/L criterion will apply.

For Project reservoirs, an 8.0 mg/L salmonid-rearing DO criterion applies at depths of occurrence or expected occurrence of salmonids.

3.3 Facilities for compliance

A selective withdrawal facility will be constructed at the existing turbine intake at Round Butte Dam. The facility, which will have intake gates at near the reservoir's surface and at depth, will be operated to blend water from the two intakes to meet the applicable ODEQ and CTWS DO standards in the lower Deschutes River and in Project reservoirs. The existing Reregulation Dam spillway facilities may also be used to comply with the applicable lower river DO and IGDO criteria, if needed (described below).

3.4 Approach to DO management

To meet the ODEQ and WCB DO standards, the Joint Applicants propose to operate the selective withdrawal facility within the range of surface and bottom withdrawals shown in Table

2.1. Based on an iterative model-run sequence using data from 1995 (based on flow, temperature, and water quality data from the 1995 water-year [Khangaonkar 2001]), the percentages of surface and bottom withdrawals listed in Table 2.1 would result in DO concentrations in the Project discharge that would exceed 11.0 mg/L during most of the year. During the period when DO concentrations would fall below 11.0 mg/L, DO concentrations are expected to be greater than 9.0 mg/L. These results indicate that the Project will meet the ambient DO criterion of 11.0 mg/L most of the time and during the rest of the year will comply with the 9.0 mg/L DO criterion.

Controlled spills at the Reregulating Dam have been shown to increase DO concentration in the discharge (Raymond et al. 1999). Therefore, if under the temperature management selective withdrawal regime it appears that the DO concentration in the Reregulating Dam discharge is going to drop below 11.0 mg/l or 95% saturation, the Joint Applicants will institute controlled spills at the Reregulating Dam to maintain ambient DO concentrations above 11.0 mg/L or 95% saturation.

Based on modeling results, it is also anticipated that DO concentrations will exceed 9.0 mg/L at all times, regardless of whether controlled spills are instituted at the Reregulating Dam. If post-selective withdrawal monitoring of IGDO demonstrates that IGDO levels exceed 8.0 mg/L at all times, the alternate water column criterion of 9.0 mg/L will apply. The need for controlled spills at the Reregulating Dam to meet the 11.0 mg/L criterion would thus be eliminated.

3.5 Dissolved oxygen monitoring

Dissolved oxygen monitoring will be conducted for the life of the license at sites identified in Table 6.1. As data are collected and analyzed, specific DO monitoring sites may be added or eliminated in accordance with the 401 certifications. Real-time monitoring of DO will occur at the Reregulating Dam (RM 100) and in the Round Butte Dam tailrace. Monitoring at these locations will allow recording and transmission of hourly DO concentration measurements, which will be used to determine when controlled spills at the Reregulating Dam might be necessary to comply with ODEQ and CTWS standards.

Intergravel dissolved oxygen will be monitored downstream of the Reregulating Dam after the implementation of the selective withdrawal facility to verify the relationship between IGDO and ambient DO concentrations under selective withdrawal conditions. In accordance with current ODEQ and WCB protocols, sampling will be conducted during the first three years following implementation of the selective withdrawal facility. Thereafter, if the relationship between IGDO and ambient DO levels indicates that the 9.0 mg/L water column criterion is applicable, both IGDO and ambient DO levels will be monitored to demonstrate compliance with the dissolved oxygen standard.

3.6 DO management operations

It is anticipated that the surface intake will be used exclusively from January through May or June, depending upon the actual blending regime (Table 2.1). During the remaining months of the year, a blend of surface and bottom withdrawal will be released as part of the proposed temperature management program for the Project. If DO concentrations measured in the Round Butte Dam tailrace fall below 12 mg/L, the Joint Applicants will closely monitor discharge at the Reregulating Dam. If the seven-day mean minimum dissolved oxygen concentration in the discharge from the Reregulating Dam drops below 11.5 mg/L, the Joint Applicants will notify ODEQ and the WCB. The Joint applicants will institute controlled spills at the Reregulating Dam as the Joint Applicants determine necessary to maintain DO concentrations above 11.0 mg/L or 95% saturation.

However, if post-selective withdrawal IGDO monitoring demonstrates that the 9.0 mg/L standard is applicable, the management plan will be modified as follows:

If DO concentrations measured in the Round Butte Dam tailrace fall below 10 mg/L, the Joint Applicants will closely monitor discharge at the Reregulating Dam. If the seven-day mean minimum dissolved oxygen concentration in the discharge from the Reregulating Dam drops below 9.5 mg/L, the Joint Applicants will notify ODEQ and the WCB. The Joint Applicants will institute controlled spills at the Reregulating Dam as the Joint Applicants determine necessary to maintain DO concentrations above 9.0 mg/L.

Over time, it is expected that Project operators will further refine the relationship between DO concentrations in the Round Butte Dam tailrace and the Reregulating Dam discharge, which will lead to more effective prediction of when DO concentrations in the Reregulating Dam tailrace might approach ODEQ and CTWS standards. An improved correlation would allow for quicker and more accurate adjustments.

3.7 Reporting

Reports will be produced in two forms. Updates on DO concentrations at the two monitoring locations will be provided by email monthly, or more often if DO changes prompt the implementation of controlled spills. These email reports will include attached data files that will include the DO data gathered during the time period. In the event that a controlled spill program is instituted, regular reports (the reporting interval to be agreed upon at the time by ODEQ, the CTWS WCB, and the Joint Applicants) will be submitted via email. In addition, annual reports will be produced that will include graphs of DO data and a summary of the results of spills, if they occur. Annual reports will be submitted to ODEQ, the WCB, and the FTS February and presented at the annual Fisheries Technical Workshop.

4.0 pH (HYDROGEN ION CONCENTRATION) MANAGEMENT PLAN

4.1 ODEQ and CTWS pH standards

The applicable ODEQ and Tribal water quality standards can be found in OAR 340-41 and Tribal Ordinance 80, respectively.

4.2 Application to the Pelton Round Butte Hydroelectric Project

The pH criterion of 6.5 to 8.5 Standard Units applies in the lower river. This same criterion also applies in the Project reservoirs with an exception allowed for exceedances of 8.5 in instances where all practical measures are being employed to minimize exceedance

4.3 Facilities for compliance

A selective withdrawal facility will be constructed at the existing turbine intake at Round Butte Dam. The facility, which will have intake gates at near the reservoir's surface and at depth, will be operated to blend water from the two intakes to meet the applicable ODEQ and CTWS pH standards in the lower Deschutes River and in Project reservoirs.

4.4 Approach to pH management

To meet the ODEQ and WCB pH standard, the Joint Applicants propose to operate the selective withdrawal facility in within the range of surface and bottom withdrawals shown in Table 2.1. Based on an iterative model-run sequence, the percentages of surface and bottom withdrawals listed in Table 2.1 would result in Project discharge values of pH that are lower than inflow pH values (see section 4.2). Because of this, the selective withdrawal regime proposed for the management of temperature and DO will suffice for management of pH as well.

4.5 pH monitoring

pH monitoring will be conducted for the life of the license at sites identified in Table 6.1. As data is developed and analyzed, specific pH monitoring sites may be added or eliminated in accordance with the 401 certifications. Continuous monitoring of pH will occur at the Reregulating Dam (RM 100). The tributaries to Lake Billy Chinook will be monitored monthly (see Table 6.1). When pH at the Reregulating Dam exceeds 8.3 S.U., monitoring in the three tributaries will be conducted weekly until pH at the Reregulating Dam drops below 8.3 S.U., when monthly sampling will be resumed. Data collected at the Reregulating Dam will be compared to data collected in the tributary inflows.

4.6 pH management operations

It is anticipated that the surface intake will be used exclusively from January through May or June, depending upon the actual blending regime (Table 2.1). During the remaining months of the year, a blend of surface and bottom withdrawal will be released as part of the temperature management program for the Project.

It is anticipated that Project discharge pH will be lower than that of the weighted average of the three inflows. Data collected upstream and downstream of the Project area and in Project reservoirs from 1994 through 2001 indicate that inflow pH exceeds that of the Project discharge (Figure 4.1). However, if pH at the Reregulating Dam is found to exceed that of the weighted average of the inflows, the Joint Applicants will immediately contact ODEQ and the CTWS WCB to develop an approach to reduce pH that is consistent with maintaining compliant temperature and DO values and surface withdrawal volumes necessary to facilitate smolt movement in Lake Billy Chinook.

Under the guidance of the two regulatory agencies, the Joint Applicants will modify the selective withdrawal regime within the range of surface and bottom withdrawals shown in Table 2.1. Because pH of the Project discharge could exceed inflow pH as a result of withdrawal of surface water from Lake Billy Chinook (due to photosynthetic activity in the reservoir's epilimnion), the likely modification would be the reduction in the amount of surface withdrawal relative to bottom withdrawal. The change in the proportion would be determined on a case-specific basis, if such modification can be undertaken consistent with temperature, DO, and fish passage considerations.

Over time, it is expected that Project operators will further refine the relationship between pH in the Round Butte Dam tailrace and the Reregulating Dam discharge, which will lead to more effective prediction of whether pH concentrations in the Reregulating Dam tailrace might approach ODEQ and CTWS standards. An improved correlation would allow for quicker and more accurate adjustments. If adjustment of the proportions of surface and bottom withdrawal becomes necessary, experience with the adjustments' effect on pH will also help refine the understanding of measures needed to maintain pH in compliance with ODEQ and CTWS standards at the discharge, while still meeting applicable temperature, DO, and fish passage obligations.

Ensemble pH Distribution (1994-2001)

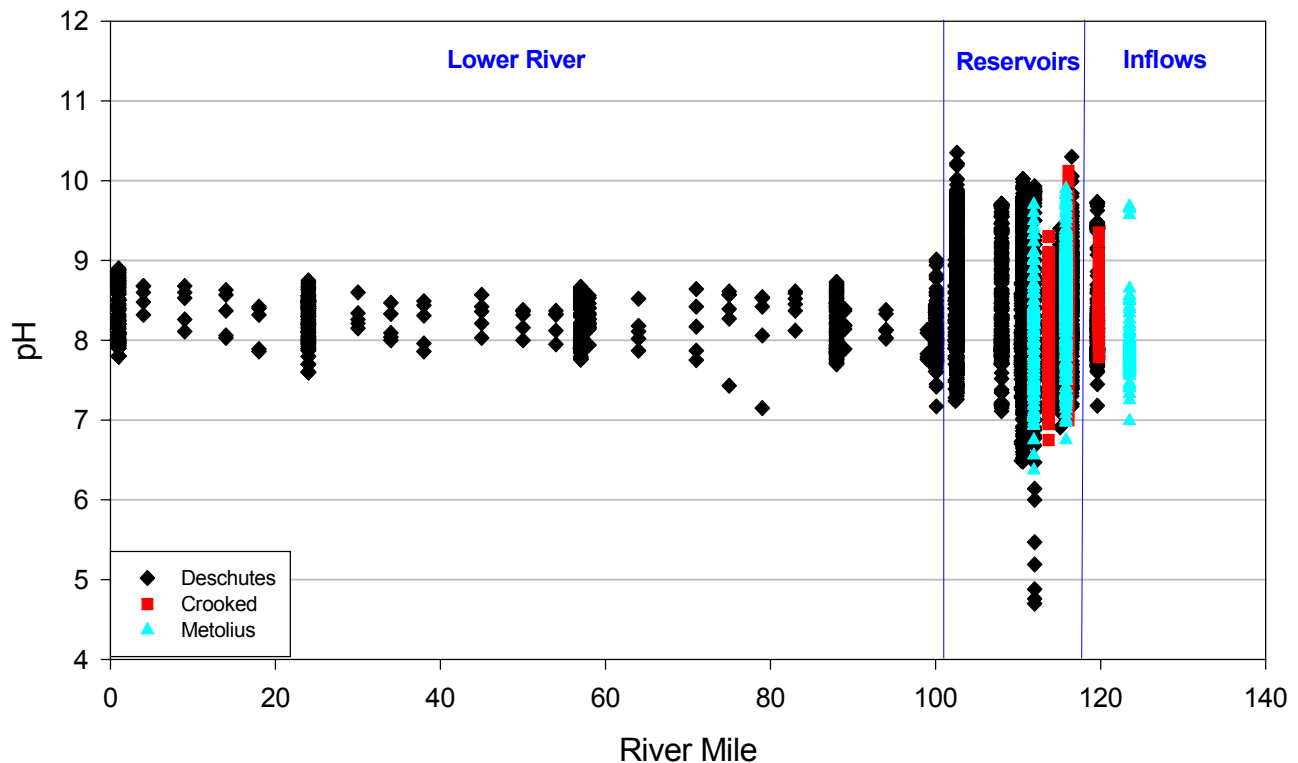


Figure 4.1. pH data collected in the Project area between 1994 and 2001 (Foster Wheeler 2002).

4.7 Reporting

Reports will be produced in two forms. Updates on pH will be provided by email monthly, or more often if pH changes prompt the implementation of a modified withdrawal regime. These email reports will include attached data files that will include the pH data gathered during the time period. In the event that a modified withdrawal regime is instituted, regular reports (the reporting interval to be agreed upon at the time by ODEQ, the CTWS WCB, and the Joint Applicants) will be submitted via email. In addition, annual reports will be produced that will include graphs of pH data and a summary of the results of withdrawal modifications, if they occur. Annual reports will be submitted to ODEQ, the WCB, and the FTS each February and presented at the annual Fisheries Technical Workshop.

5.0 NUISANCE PHYTOPLANKTON GROWTH MANAGEMENT PLAN

5.1 ODEQ and CTWS nuisance phytoplankton standards

The applicable ODEQ and Tribal water quality standards can be found in OAR 340-41 and Tribal Ordinance 80, respectively.

5.2 Application to the Pelton Round Butte Hydroelectric Project

Based on existing survey information and recreational use of the Project reservoirs, beneficial uses under existing conditions have not been identified as impaired by nuisance phytoplankton. Compliance with the ODEQ and CTWS standards will consist of monitoring Project reservoirs to detect whether increases in chlorophyll *a* (an indicator of phytoplankton biomass) occur as the result of implementing the selective water withdrawal regime shown in Table 2.1, and potentially, as indicated below, conducting user surveys and implementing adaptive management.

5.3 Approach to nuisance phytoplankton management

The Joint Applicants will monitor chlorophyll *a* levels in the forebays of Lake Billy Chinook and Lake Simtustus (see Section 6.3.3; other sites will be sampled as part of long-term monitoring, but the forebay sites will be used for comparisons of pre- and post-selective withdrawal chlorophyll *a* levels). Samples from the epilimnion and 50 m depth will be integrated.

Results of sampling conducted after the implementation of selective withdrawal will be compared to data collected at the same location under current operations. Comparisons of pre- and post-selective withdrawal chlorophyll *a* concentrations will be based on average values from at least three consecutive months. Post selective withdrawal data will be collected between April and October, i.e., the season of significant on-reservoir use. If average chlorophyll *a* concentrations after implementation of selective withdrawal exceed average pre-selective withdrawal concentrations by more than 10% for two consecutive years, the Joint Applicants will consult with ODEQ and the CTWS WCB regarding the need to conduct a recreational user survey to assess whether or not beneficial uses have been impaired. If results of any required recreational survey indicate that impairment has occurred, the Joint Applicants—under the guidance of ODEQ and the CTWS WCB—will assess the feasibility of implementing a control strategy for attaining compliance that is technically and economically practicable.

5.4 Reporting

Updates on nuisance phytoplankton growth will be provided by email quarterly. These email reports will include summaries of chlorophyll *a* measurements from Lake Billy Chinook and Lake Simtustus. If an exceedance is measured, the Joint Applicants will notify ODEQ and the

CTWS WCB and work with these agencies to develop an appropriate recreational user survey. Results from these surveys will be provided via email to ODEQ and the CTWS WCB within one week after completion of the survey. Annual reports will be submitted to ODEQ, the WCB, and the FTS each February and presented at the annual Fisheries Technical Workshop.

6.0 WATER QUALITY MONITORING PLAN

6.1 Monitoring objectives

There are four primary objectives of this water quality monitoring plan:

1. To determine whether the Project is in compliance with the ODEQ and WCB water quality standards as well as the 401 certification.
2. To collect water quality data to aid in the identification of adaptive management measures needed to ensure compliance with the ODEQ and WCB water quality standards, and the 401 certification.
3. To continue to collect water quality data at sites that have been used in other baseline studies to determine if trends exist related to the Project or other sources.
4. To collect water quality data that can be used for other aquatic studies related to reintroduction of anadromous fish.
5. To collect data on *E. coli* that will be provided to the appropriate recreation facility managers.

6.2 Methods

6.2.1 Temperature monitoring

Onset® temperature loggers (or equivalent), set at 1 h and 1.5 h recording intervals, will be installed at 16 locations (Table 6.1). The locations include 14 of the original 19 sites that were sampled during a limnological study (Raymond et al. 1997). Site 7 in the forebay of Round Butte Dam will be a continuous profile station with 12 recorders suspended in the water column from the surface to 100 m in depth. Site 4 in the forebay of Pelton Dam will also be a continuous profile with 4 recorders from the surface to 40 m. In addition, four grab temperature profiles will be collected monthly in Lake Billy Chinook (sites 7, 10, 13, and 16) and in the forebay of Pelton Dam (site 4). Profile stations will determine the level of temperature stratification (Hutchinson 1957).

Seven of the eight sites in the lower Deschutes River are the same as those used by Huntington et al. (1999) for validating their model. The eight loggers in the lower river will record temperature every 1 h and will be downloaded quarterly (the logger at site 2 will be downloaded monthly for the fish facility report). The remaining loggers that record at 1.5-h intervals will be downloaded quarterly. Data summaries would include seven-day moving means of the daily maximum temperature.

Real-time temperature monitoring equipment will be installed at the three USGS gauging stations upstream and the one USGS gauging station downstream of the Project. When this occurs, data would be more readily available for evaluating temperatures.

6.2.2 Multi-parameter monitoring (including DO and pH)

A Hydrolab® (or equivalent) water quality multi-parameter probe will be used monthly at 16 sites to collect both grab and profile samples. Three of the sixteen sites will be in the lower Deschutes River. The parameters recorded will include: temperature, dissolved oxygen, conductivity, total dissolved solids, turbidity, and pH. The remaining five sites in the lower river will be sampled quarterly coinciding with logger downloading. There will be one continuous Hydrolab® operating in the tailrace of the Reregulating Dam. It will record at 1-h intervals and be downloaded monthly. In addition to the previously mentioned water quality parameters, it will also record total dissolved gas and chlorophyll *a*. There will be one continuous Hydrolab® in the tailrace of Round Butte Dam. It will record hourly measurements of: temperature, dissolved oxygen, conductivity, and pH.

If Reregulating Dam tailrace readings of pH or dissolved oxygen exceed applicable water quality standards, water quality probes will be placed in the tributary inflows to collect short-term continuous data.

Intergravel dissolved oxygen will be monitored downstream of the Reregulating Dam the first three years following implementation of the selective withdrawal facility to verify the relationship between IGDO and ambient DO concentrations. This monitoring will be performed in accordance with current ODEQ and CTWS-WCB protocol. Prior to conducting this monitoring, the Joint Applicants will submit for approval a study plan that clearly identifies the protocol for collecting the information for evaluating the IGDO/DO relationship.

6.2.3 Nutrient and chlorophyll *a* monitoring

Water samples will be collected from 12 sites monthly for nutrient analysis and 7 sites for chlorophyll *a*. The months of November, January, and February will not be sampled. Nutrients will include: nitrate-nitrogen, ammonia-nitrogen, total Kjeldahl nitrogen, total phosphorus, and orthophosphate. Sample sites in Lake Billy Chinook will include all three tributaries and points midway down each arm of the lake at the surface. In the forebay of Round Butte Dam, two samples will be collected, one from the epilimnion at the surface and one from the hypolimnion at 50 m with a Van Dorn sampler. In Lake Simtustus, the tributary Willow Creek will be sampled along with two samples from the forebay of Pelton Dam, at the surface and 40 m. There will be two sites in the lower river. One will be at the Reregulating Dam tailrace and the other below White River. This sampling will be done for two years starting one year after implementation of selective withdrawal at the Project. A complete list of all monitoring sites, parameters, and sampling frequencies is located in Table 6.1.

Samples collected from the epilimnion and hypolimnion (50 m) in the forebay Lake Billy Chinook will be integrated. Results of sampling conducted after the implementation of selective withdrawal will be compared to data collected at the same locations under current operations. Comparisons of pre- and post-selective withdrawal chlorophyll *a* concentrations will be based on average values from at least three consecutive months.

Also as an indicator of phytoplankton productivity, Secchi visibility will be measured monthly at four sites in Lake Billy Chinook and at one site in Lake Simtustus using the methods described in Lind (1974).

6.2.4 *E. coli* monitoring

E. coli bacteria samples will be collected on a monthly basis for two years following implementation of the selective withdrawal facility at the same locations as the chlorophyll *a* samples indicated above. If such monitoring reveals a bacteria problem, and follow-up investigation of the source of such a problem rules out any link to failing Project-owned wastewater facilities, then the Joint Applicants' responsibility to play a part in remedying the problem will be fully served by performing the monitoring set out in this monitoring plan.

6.2.5 Zooplankton monitoring

Beginning one year after implementation of selective withdrawal, zooplankton will be sampled quarterly at five sites. This sampling will be conducted for four years. The samples will be collected using a high-efficiency zooplankton net (64 µm mesh size) with a 20 cm mouth opening. At each site two vertical samples will be collected; one sample from 30-10 m and one from 10 m to the surface. Zooplankton sampling sites in Lake Billy Chinook will be the same as those used for 5 years during the Lake Billy Chinook Kokanee Study (Thiesfeld et al. 1999) and a previous limnological study (Raymond et al. 1997). Zooplankton will be classified into three major taxonomic groups: cladocera, copepoda, and rotifera (Wetzel 1983). Laboratory methods for zooplankton can be found in Standard Methods (1998) and Lewis (1979).

6.2.6 Lower Deschutes River macroinvertebrate and periphyton monitoring

A macroinvertebrate and periphyton study was conducted from the fall of 1999 to the fall of 2001 (Kvam et al. 2001, Kvam 2002). This study was intended to establish the baseline data to which comparisons could be made after the implementation of the selective withdrawal at Round Butte Dam. The study will be repeated (i.e., two spring and two fall sampling events) starting three years after implementation of selective withdrawal once a new equilibrium has been reached using the same methods and locations. A new equilibrium could be the result of many potential factors such as: limnological changes of Lake Billy Chinook and Lake Simtustus, lagging lake bottom sediment interactions (Wetzel 1983), multiple year life cycles of some aquatic invertebrates (Anderson and Wallace 1988), and ecological interactions within the benthic community.

6.2.7 Total dissolved gas monitoring

Total dissolved gas (TDG) will be measured below the Reregulating Dam during the two years following implementation of selective withdrawal. Sampling will take place during significant spill events at the Reregulating Dam. Two years of frequent spill with TDG values less than 110% of saturation, would indicate that TDG is not a concern downstream of the Project. If monitoring of total dissolved gas at the Reregulating Dam tailrace at times of spill indicates noncompliance with the total dissolved gas standard, then the Joint Applicants will immediately develop a plan and schedule for assessing the problem and developing a remedy. The plan and schedule will be submitted to ODEQ and the CTWS WCB for approval within sixty days of identifying the excessive total dissolved gas concentrations via monitoring.

6.2.8 Lower River geomorphic monitoring

Monitoring will be conducted in the lower Deschutes River to address potential continuing Project effects on sediment transport and spawning gravel. The Joint Applicants will implement the monitoring efforts detailed in Exhibit E-III of the Final Joint Application Amendment (see pg. E-III-90).

6.2.9 Large wood monitoring

All large wood (greater than 20 cm by 3 m); (Moore et al. 1993; Maser and Sedell 1994) entering Lake Billy Chinook will be removed and placed into the lower Deschutes River below the Reregulating Dam. Following a flow event that results in the transport of significant amounts of large wood into Lake Billy Chinook, the Joint Applicants will consult with ODFW and CTWS Natural Resources to obtain specific guidance pertaining to the placement and monitoring of that large wood in the lower Deschutes River below the Project's Reregulating Dam. The Joint Applicants will obtain all necessary regulatory licenses, permits, or approvals from tribal, federal, state and local authorities prior to large wood placement.

6.2.10 Project operations monitoring

The Joint Applicants will monitor Project operations related to Project inflow and outflow, minimum flow releases, run-of-river operations, and stage changes of the Project reservoirs and the river below the Project. These are described below.

6.2.10.1 Flow monitoring at the USGS Madras Gage

To enhance the accuracy of lower-river flow data readings and maintain agreement between the Project and USGS data, the Joint Applicants will install modern flow monitoring equipment at the Madras gage. This equipment will be used for both the Project's control of downstream flows and for USGS flow monitoring. For compliance purposes, the daily outflow of the Project will be defined as the average flow measured at the USGS Madras gage each calendar day.

6.2.10.2 Hourly monitoring of Project inflows

Operation of the Project will require monitoring changing inflow conditions and to set flow releases to maintain a run-of-river operation. The Joint Applicants will improve flow monitoring systems upstream of the project and prepare hourly estimates of inflows to the project. The hourly inflow estimates will be the sum of USGS-gauged flows at upstream locations in the three arms of Lake Billy Chinook and an estimate of ungaged flows to the project. The Joint Applicants may also improve reservoir level monitoring systems in Lake Billy Chinook or may add additional stream flow gages on tributaries to the project impoundments to improve the accuracy of the ungaged inflow estimating technique.

6.2.10.3 Monitoring minimum flow releases below the Reregulating Development

The Joint Applicants propose to increase minimum flows below the project to protect downstream river values (see the 401 application contained in the Final Joint Application Amendment).

For compliance purposes, flows released at the Madras USGS gage shall not be less than the target daily flow. To accommodate flow disturbances and control changes, instantaneous flow rates may vary from the target daily flows. The instantaneous flow at the Madras gage shall not be more than 260 cfs less than the target daily flow for any two consecutive 30-minute readings at the USGS Madras gage. The daily outflow from the Reregulating Development may be less than the target daily flow under conditions of low project inflows or low reservoir levels in Lake Billy Chinook. The required minimum flows may be reduced by 150 cfs, if the licensee determines that the reduced outflows are necessary to ensure the refilling of Lake Billy Chinook to its minimum summer operating level of 1,944 ft by June 15. This provision will protect resource values in Lake Billy Chinook.

6.2.10.4 Monitoring run-of-river operation for lower river flows

To protect downstream river resources the Joint Applicants propose to hold river flows below the Reregulating Development to within +/- 10 percent of the measured project inflow under most conditions. Conditions or events where this criterion would not be followed include: (1) days with measured inflow in excess of 6,000 cfs, (2) any event that triggers the Project Emergency Action Plan, (3) power emergencies, as defined in the Western Systems Coordinating Council Minimum Operating Reliability Criteria (WSCC 1999),¹ (4) equipment failures or emergencies at one of the Project dams or power plants, and (5) reservoir drawdowns needed for safe passage of anticipated floods to minimize damage to life and property.

¹ Page X-60: "Power Emergency: An abnormal system condition which requires immediate manual or automatic action to prevent loss of firm load, equipment damage, or tripping of system elements that could adversely affect the reliability of the electric system."

A flow of 6,000 cfs has historically been exceeded about 12 percent of the time over the period of record. Inflows of this magnitude occur during storm events or the spring runoff season. The Joint Applicants will not follow the run-of-river provision when inflows are above this level because the Project must be operated to ensure the structural safety of the Project facilities and to protect downstream life and property during flood events. Compliance with this requirement will be based on information from the modernized USGS Madras gage and hourly inflow estimates to Lake Billy Chinook.

6.2.10.5 Monitoring river stage changes below the Reregulating Development

As an enhancement for recreational safety and downstream river resources, the Joint Applicants propose to limit river level (stage) changes at the Reregulating Development as detailed below:

<u>Period</u>	<u>Hourly Stage Change Control Limit</u>	<u>Daily Stage Change Control Limit</u>
May 15 to October 15	0.05 ft	0.2 ft
October 16 to May 14	0.1 ft	0.4 ft

During extraordinary situations the Project Operator may deviate from these stage change limits. Such extraordinary situations include: (1) flood events, (2) any event that triggers the Project Emergency Action Plan, (3) rapid changes in Project inflows, i.e., when the rate of inflow change exceeds the proposed stage change limits, and (4) equipment failures or emergencies at the Reregulating Development.

To monitor compliance with this requirement, the Project Operator will record the time and control signal value for all stage change instructions at the Reregulating Development and will report any control signal changes that are greater than the value specified above. In addition, the project operator will provide written documentation of all measured stage changes at the USGS Madras gage that deviate more than 0.15 ft from the control set-point value.

6.2.10.6 Monitoring seasonal drawdown and fluctuation limits for Project reservoirs

The Joint Applicants will limit normal maximum seasonal drawdown of Lake Billy Chinook to 20 feet. Lake Billy Chinook shall be filled and at normal operation level of 1944 feet by June 15. The minimum level will be maintained at 1944 ft from June 15 to September 15 for Lake Billy Chinook. During the refill period, usually January through March, the Project may reduce outflows to the Lower River by a maximum of 150 cfs to ensure refill.

Seasonal drawdown limits for Lake Simtustus and the Reregulating Reservoir will be as follows: Lake Simtustus, 1,576 ft elevation from June 1 through August 31 and 1,573 ft from September 1 to May 31; Reregulating Reservoir 1,414 year round. Certain extraordinary situations are specified when the Project Operator may exceed the normal seasonal drawdown limits for the three reservoirs. These include (1) drawdown needed for safe passage of anticipated floods to minimize damage to life and property, (2) drawdown required to complete repairs on Project facilities, including spillway gates, intake structures, or other dam structures, and (3) power

emergencies, as defined in the WSCC Minimum Operating Reliability Criteria. Refill of Lake Billy Chinook in the spring will not be delayed unless daily inflows are below the target daily flows for the downstream river and a specified extraordinary situation occurs. Under these conditions, the project operator will refill Lake Billy Chinook according to the low Lake Billy Chinook Reservoir condition, i.e., if the reservoir level in Lake Billy Chinook is projected to be below the summer operating level (minimum elevation of 1,944 ft) between June 15 and September 15, the Project Operator may reduce the flow release to ensure the reservoir reaches the minimum pools elevation of 1,944 feet. The flow release at the Madras gage under these conditions shall be defined as the daily inflow less 150 cfs.

Compliance with these drawdown limits will use real-time lake level monitoring devices located at Lake Billy Chinook and Lake Simtustus.

6.3 Quality assurance and quality control

The Joint Applicants will develop and submit for approval to the Environmental Protection Agency (EPA) on behalf of the CTWS WCB and ODEQ a comprehensive Quality Assurance and Quality Control (QA/QC) plan, based on EPA and ODEQ guidelines. The QA/QC plan shall be submitted to these regulatory agencies by no later than April 1, 2003. All measures outlined in the QA/QC plan will be Project-specific, with explanations of how data collection conducted at all sites will comply with the guidelines. The following sections provide a brief outline of expected QA/QC measures, by parameter. The Joint Applicants will implement this Water Quality Monitoring Plan in accordance with the approved QA/QC plan.

6.3.1 Equipment calibration and maintenance

Routine calibration and maintenance of field and lab equipment will be done in accordance with manufacturer's guidelines. The Hydrolab® used for monthly grab samples will be calibrated just prior to sampling using manufacturer's recommended standards. The continuous Hydrolab® located in the Reregulating Dam tailrace will be downloaded and calibrated monthly. All temperature loggers will be checked against a National Institute of Standards and Technology thermometer before and after field deployment. If a temperature logger is more than $\pm 0.5^{\circ}\text{C}$, it will be sent to the manufacturer for re-calibration.

6.3.2 Nutrient and chlorophyll *a* laboratory analyses

Laboratory analyses will be conducted by an Environmental Protection Agency (EPA) and/or ODEQ certified laboratory. All test detection limits and methods are in Table 6.2.

6.3.3 Audits and Replicates

Temperature audits of 25 loggers will occur monthly and the remaining five located in the lower Deschutes River will be audited every 3 months coinciding with data downloading. The

continuous Hydrolab® in the Reregulating Dam tailrace will also be audited monthly for temperature, dissolved oxygen, conductivity, total dissolved solids, turbidity, and pH. The continuous Hydrolab® in Round Butte Dam tailrace will be audited monthly for temperature, dissolved oxygen, conductivity, and pH. This will be staggered two weeks from the calibration (i.e., every two weeks the probe will be calibrated or audited). This probe will be audited monthly for chlorophyll *a*. One replicate will be collected and processed for zooplankton for every sampling event. One nutrient and chlorophyll *a* replicate will be collected and processed for every sampling event. One replicate Hydrolab® grab sample will be collected for every sampling event.

6.3.4 Data quality

Data quality objectives will be in accordance with that of Level A as outlined in the Water Quality Monitoring Guidebook (OPSW 1999).

6.3.5 Field notebooks

Field notebooks will be maintained for a record of all sampling events. They will include as necessary: date, time, location, personnel, Secchi depth, percent cloud cover, sample identification numbers, water depth of sample, audits, calibrations, data downloads, and equipment maintenance and repair.

6.3.6 Reporting

An annual report will be produced that summarizes relevant water quality data. It will be submitted to the ODEQ, the WCB and the PRB FTS during February and distributed at the annual Fisheries Technical Workshop in March for the preceding year.

Table 6.1. Water quality monitoring locations and sampling summary.

Site Number	Site Description	Site Location ^a	Method of Sampling ^b	Type of Sampling ^c	Frequency
1	Disney Riffle	D 160 km	Temperature	Continuous	1 h
			Hydrolab	Grab	Monthly
2	Reregulating Dam tailrace	D 161 km	Temperature	Continuous	Real time
			Hydrolab	Continuous	1 h
			Hydrolab	Grab	Monthly
			Nutrients ^d	Grab	Monthly
			Chlorophyll <i>a</i> ^e	Grab	Monthly
3	Pelton Dam tailrace	D 165 km	Temperature	Continuous	1.5 h
			Hydrolab	Grab	Monthly
4	Pelton Dam forebay	D 166 km	Temperature	Continuous profile	1.5 h
			Hydrolab	Grab profile	Monthly
			Secchi	Grab	Monthly
			Zooplankton	Grab profile	Quarterly
			Nutrients ^d	Grab profile	Monthly
			Chlorophyll <i>a</i> ^e	Grab profile	Monthly
5	Willow Creek inflow	W 1 km	Temperature	Continuous	1.5 h
			Hydrolab	Grab	Monthly
			Nutrients ^d	Grab	Monthly
6	Round Butte Dam tailrace	D 178 km	Temperature	Continuous	Real time
			Hydrolab	Continuous	1 h
			Hydrolab	Grab	Monthly
			Nutrients ^d	Grab	Monthly
			Chlorophyll <i>a</i> ^e	Grab	Monthly
7	Round Butte Dam forebay	D 179 km	Temperature	Continuous profile	1.5 h
			Hydrolab	Grab profile	Monthly
			Secchi	Grab	Monthly
			Zooplankton	Grab profile	Quarterly
			Nutrients ^d	Grab profile	Monthly
			Chlorophyll <i>a</i> ^e	Grab profile	Monthly
10	Crooked River arm at bridge	C 5 km	Hydrolab	Grab profile	Monthly
			Secchi	Grab	Monthly
			Zooplankton	Grab profile	Quarterly
			Nutrients ^d	Grab	Quarterly
			Chlorophyll <i>a</i> ^e	Grab	Monthly
11	Crooked River inflow	C 10 km	Temperature	Continuous	Real time
			Hydrolab	Grab	Monthly
			Nutrients ^d	Grab	Quarterly
13	Deschutes River arm at bridge	D 189 km	Hydrolab	Grab profile	Monthly
			Secchi	Grab	Monthly
			Zooplankton	Grab profile	Quarterly
			Nutrients ^d	Grab	Monthly
			Chlorophyll <i>a</i> ^e	Grab	Monthly
14	Deschutes River inflow	D 192 km	Temperature	Continuous	Real time
			Hydrolab	Grab	Monthly
			Nutrients ^d	Grab	Monthly
16	Metolius River arm at Chinook Island	M 8 km	Hydrolab	Grab profile	Monthly
			Secchi	Grab	Monthly
			Zooplankton	Grab profile	Quarterly
			Nutrients ^d	Grab	Monthly
			Chlorophyll <i>a</i> ^e	Grab	Monthly
17	Metolius River inflow	M 19 km	Temperature	Continuous	Real time

Site Number	Site Description	Site Location ^a	Method of Sampling ^b	Type of Sampling ^c	Frequency
26	Crooked River at Lone Pine Bridge	C 48 km	Hydrolab	Grab	Monthly
			Nutrients ^d	Grab	Monthly
			Hydrolab	Grab	Monthly
27	Deschutes River at Lower Bridge	D 216 km	Hydrolab	Grab	Monthly
28	Dry Creek	D 149 km	Temperature	Continuous	1 h
29	Kaskela	D 127 km	Hydrolab	Grab	Biannual
			Temperature	Continuous	1 h
			Hydrolab	Grab	Biannual
30	Nena	D 93 km	Temperature	Continuous	1 h
31	Sandy Beach	D 72 km	Hydrolab	Grab	Biannual
			Temperature	Continuous	1 h
			Hydrolab	Grab	Monthly
32	Mack Canyon	D 39 km	Nutrients ^d	Grab	Monthly
			Temperature	Continuous	1 h
			Hydrolab	Grab	Biannual
33	Rockpile Campground	D 2 km	Temperature	Continuous	1 h
			Hydrolab	Grab	Biannual

^a Site location is identified by the river system and kilometers from its confluence. C = Crooked River, D = Deschutes River, M = Metolius, and W = Willow Creek.

^b Temperature data will be collected with programmable recorders. Hydrolab multi-probes will be used to collect other water quality measurements that include: temperature, dissolved oxygen, conductivity, turbidity, and pH. The continuous Hydrolab sampling at the Reregulating Dam tailrace site will also record total dissolved gas and chlorophyll *a*. Zooplankton and phytoplankton will be sampled from 30 m to 10 m and from 10 m to the surface. In Lake Billy Chinook, a nutrient sample will be collected from 50 m and the surface. In Lake Simtustus, a nutrient sample will be collected from 40 m and the surface.

^c Continuous sampling data will be collected at the frequency indicated. Grab samples will be samples collected just one time at the frequency indicated. Profile sampling data will be collected at different depths and will be: 0, 2, 4, 6, 8, 10, 20, 30, 40, 50, 75, and 100 m. If the water depth is less than 100 m, the last profile sample will be as close the bottom as possible. The continuous temperature profile in Lake Simtustus will be conducted at 0, 4, 10, and 40 m in depth.

^d Nutrients will include: nitrate-nitrogen, ammonia-nitrogen, total Kjeldahl nitrogen, total phosphorus, and orthophosphate. Monthly sampling will not include November, January, and February.

^e Chlorophyll *a*, as an indicator of algae biomass, monthly will not include November, January, and February.

Table 6.2. Tests and sampling with associated detection, accuracy, and resolution.

Test/Sample	Lab/Equipment	Detection Limit	Accuracy/ Resolution	Method
Nitrate nitrogen (NO ₃ -N)	NCA	10 ppb		EPA 353.2
Ammonia nitrogen (NH ₄ -N)	NCA	10 ppb		EPA 350.2
Total Kjeldahl nitrogen (TKN)	NCA	200 ppb		EPA 351.4
Orthophosphate (OP)	NCA	5 ppb		EPA 365.2/3
Total phosphorus (TP)	NCA	5 ppb		EPA 365.2/4
Chlorophyll <i>a</i>	AA	0.1 µg/L		Standard Methods (1998) 10200H.c
Temperature	Onset		± 0.4°C	
Temperature	Hydrolab		± 0.1°C	
Specific conductance	Hydrolab		± 1% of reading	
Total dissolved solids	Hydrolab			From linear relation with conductance
Dissolved oxygen	Hydrolab		± 0.2 mg/L	
Total dissolved gas	Hydrolab		0.1% of reading	
Turbidity	Hydrolab		± 5 NTU	
PH	Hydrolab		± 0.2 units	
Chlorophyll <i>a</i>	Hydrolab	0.02 µg/L	0.01 µg/L	

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***Pelton Round Butte Project
Settlement Agreement***

A P P E N D I X B

HATCHERY CONTRACT

Pelton Round Butte Project – FERC No. 2030

July 2004

DRAFT

AGREEMENT RELATED TO THE OPERATION OF THE ROUND BUTTE HATCHERY
AND RELATED FACILITIES

This Agreement is entered into this _____ day of _____, 2004, by and among PORTLAND GENERAL ELECTRIC COMPANY ("PGE") an Oregon corporation and the CONFEDERATED TRIBES OF THE WARM SPRINGS RESERVATION OF OREGON ("CTWS") (collectively "the Licensees") and the STATE OF OREGON, acting by and through the OREGON DEPARTMENT OF FISH AND WILDLIFE ("ODFW").

RECITALS:

WHEREAS, PGE and CTWS are the Licensees for the Pelton Round Butte Project, FERC Project No. 2030 ("Project"), a new license for which was issued on _____, 2004; and

WHEREAS, the Licensees, ODFW and other parties entered into a Settlement Agreement dated _____, 2004 ("Settlement"), and the terms of the Settlement require that the Licensees continue funding of operations of the Round Butte Fish Hatchery and related facilities as defined below; and

WHEREAS, the Licensees and ODFW intend that, upon its effective date, this Agreement shall supersede and replace all previous agreements between PGE and ODFW regarding Hatchery operations, including their 1972 agreement.

THEREFORE, in consideration of the foregoing recitals and the mutual terms and conditions set forth herein the Licensees and ODFW (collectively the "Parties") hereby agree as follows:

1. Purpose and Intent

The purpose of this Agreement is to assure successful and cost-effective operation of the Round Butte Hatchery (hereafter the "Hatchery" as further defined under §3 below) located at Round Butte Dam on the Deschutes River, Oregon.

The intent of the Parties is to operate and maintain the Hatchery as necessary to provide the numbers of chinook salmon and steelhead trout for existing fisheries, as well as other species, as may be mutually agreed.

The Parties further agree that the Hatchery will be operated to both support the goals of the Settlement's "Fish Passage Plan" and to support the goals of self-sustaining and harvestable fisheries in the lower Deschutes River. The multiple purposes of the Hatchery will require close coordination among the Parties on an ongoing basis.

2. Term

Unless earlier terminated as provided elsewhere herein, the term of this Agreement will be the term of the new FERC license for the Project, and any annual licenses issued subsequent to the expiration of that license; provided however, that this Agreement may be terminated by either party if, during the term of the new FERC license, and according to the terms of the Settlement, the Hatchery is determined to no longer be needed to achieve the goals of the fisheries mitigation program required by the Settlement and the new FERC license.

3. Funding

The Licensees shall provide all funding for the operations, maintenance, and agreed upon capital improvements for the Hatchery, which is defined for purposes of this Agreement to include the fish production facilities located at Round Butte Dam, the rearing facilities located in the Pelton Fish Ladder, the fish trapping and sorting facilities located at the reregulating dam, all necessary and related equipment including vehicles and the three hatchery houses and associated buildings located near the Project offices. Throughout the term of this Agreement, and in accordance with §4, Licensees shall provide annual funding for Hatchery operations at levels sufficient to maintain production at the same level as the most recent preceding year, unless otherwise agreed in writing between the parties.

4. Budget

- a. Budgets for operation and maintenance of the Hatchery shall be developed in accordance with each State of Oregon fiscal biennium.
- b. In addition, an annual budget shall be prepared by April 15th of each year. This annual budget shall be presented by quarter, with annual totals, and include appropriate line item breakdowns within the following general budget categories: personal services, services and supplies, indirect charges, contract services, and capital or non-expendable equipment or improvements (including justification for proposed capital improvements or property acquisitions). A budget year is the 12 month period from July 1st to June 30th of each year.
- c. To the extent agreed to by the Parties, the annual budget for Hatchery operations and maintenance items will be included in the annual operating budget for the Project.
- d. Capital items which are agreed by the Parties as being necessary for the health and safety of ODFW employees, necessary for the continued operation of the Hatchery at agreed upon production levels outlined in § 7, or required by the terms of the Settlement's Fish Passage Plan shall be funded by the Licensees as provided in the approved annual budget and AOP, defined below. Plans for implementing any changes to Hatchery facilities required by the Settlement's Fish Passage Plan will be developed cooperatively by the Licensees and ODFW and reflected in the AOP. Other

capital items identified in the approved AOP and annual budget shall be subject to the Licensee's then- in- effect capital funding and allocation process.

- e. Within 30 days of receipt of ODFW's proposed annual budget, the Licensees and ODFW shall meet to approve or propose revisions to the annual budget. ODFW and the Licensees shall attempt to negotiate a resolution to any disputed portions of the annual budget. Both Parties shall seek to approve a final annual budget by June 15. If the parties cannot reach agreement on the annual budget and that budget year commences, then the annual budget for that budget year, except for the disputed portions, shall take effect. If excluding the disputed portion of the annual budget would make continued Hatchery operations impractical, then the Parties shall operate the Hatchery and the Licensees shall provide funding in accordance with the budget for the most recent preceding year, until the dispute is resolved.
- f. ODFW must receive written approval from the Licensees for major changes to an annual budget, including: (1) changes of substance in position activities, (2) changes in the amount of any approved budget category that would alter the total budget amount in that category by more than 5 percent, and (3) any change in the amount of any general budget category that would result in an increase in the total annual budget amount by 5 percent or more. ODFW shall request approval as soon as is practicable after the need for such change becomes known. ODFW shall include with such request documentation adequate to justify requested budget changes, capital improvements or acquisition of materials, equipment or supplies.
- g. ODFW shall be reimbursed at monthly intervals by the Licensees for the costs and expenses incurred by ODFW in fulfilling its obligations under this Agreement and in accordance with the approved budget for that year.

5. Annual Operating Plans (AOP)

- a. By April 15 of each year ODFW shall submit a proposed annual operating plan ("AOP"), including an annual budget, to the Licensees, for the operation and maintenance of the Hatchery for the following budget year. ODFW shall operate the Hatchery in accordance with: (1) the approved AOP and annual budget, (2) applicable policies and regulations of the State of Oregon; (3) any Hatchery Genetics Management Plan or other directive developed between ODFW and NOAA Fisheries pursuant to the Endangered Species Act, and (4) this Agreement.
- b. The AOP shall set forth details of the operation of the Hatchery and include:
 - 1. A production plan, which shall specify the species, broodstock sources and the annual production goal for each species to be produced at the Hatchery. Current production goals are outlined under § 7. The production plan will contain an assessment of the production plan's consistency with the Settlement's Fish Passage Plan.

2. A release plan, which shall identify by species and weight the rearing schedule and planned distribution of fish and the schedules and locations for releases.
- c. Within 30 days of receipt of ODFW's proposed AOP, the Licensees and ODFW shall meet to approve or propose revisions to the AOP. ODFW and the Licensees shall attempt to negotiate a resolution to any disputed portions of the AOP. Both Parties shall seek to approve a final AOP by June 15. If the Parties cannot reach agreement on a portion of the AOP for a year and that AOP year commences then the remainder of the AOP shall take effect. If excluding the disputed portion of the AOP makes Hatchery operation impractical under such AOP, then the Parties shall operate the Hatchery in accordance with the AOP for the most recent preceding year until the dispute is resolved.
- d. ODFW must receive written approval from the Licensees' lead fish biologist at the Project for significant changes to an approved AOP, including: material changes in Hatchery activities. ODFW shall request approval as soon as is practicable after the need for such change becomes known. ODFW shall include with such request documentation adequate to justify requested capital improvements or acquisition of materials, equipment, or supplies.
- e. Notwithstanding the above, in the event of an emergency at the Hatchery, ODFW shall notify Licensee's lead fish biologist who has the authority to authorize emergency expenditures. If the lead fish biologist is unavailable, ODFW shall notify the Licensee's alternate authorized personnel at _____. However, in the event ODFW can not reach Licensee's alternate authorized personnel, ODFW may make such repairs as are necessary to deal with any such emergency and shall be reimbursed by Licensee for any reasonable emergency expenditure. As soon as possible following the emergency, ODFW shall report back to PGE with documentation justifying all emergency expenses.

6. Approval of Budget and AOP

Upon approval by the Parties, the annual budget and the AOP shall be signed by an authorized representative of the Project operator and ODFW. The Parties acknowledge and agree that it is their intent to be bound by the annual budget and AOP documents, which documents, upon execution, are deemed to be incorporated herein and become part of this Agreement.

7. Meetings

The Parties shall meet twice each calendar year to review: (1) the operation and maintenance of the Hatchery, (2) the status of the AOP, the annual budget and the biennial budget, and (3) any other topics as may be mutually agreed. One meeting will be held in conjunction with the annual meeting required under the Settlement's Fish Passage Plan. The other meeting will be held on or before May 15 of each year.

8. Hatchery Production Goals

The Parties agree that the existing Hatchery facilities are appropriate for raising (spring) chinook and steelhead at the following agreed- upon levels:

- a. Current target production levels funded by the Licensees of yearling smolts are 162,000 steelhead and 240,000 spring chinook.
- b. Total weight of smolts produced shall not exceed 78,000 pounds annually. In addition to these smolts produced for release into the lower Deschutes River, up to 30,000 post-smolt steelhead will be released into Lake Simtustus (15,000 pounds) as catchable trout.
- c. Actual production numbers and release sizes should be within 10% of the Hatchery production goals stated herein, unless otherwise agreed to in writing or expressed in the AOP.
- d. To the extent consistent with ODFW's "Basin Fish Management Plan for the Deschutes and its Tributaries" and consistent with harvest goals, any changes to the species composition must be agreed to in the Hatchery AOP.
- e. Additional fish or species may be reared at the Hatchery if funded by other monies and included in an applicable basin management plan.
- f. Fish will be marked as necessary for evaluation and fisheries management purposes.

In addition, the Hatchery will produce eyed eggs and fry needed to support the Settlement's Fish Passage Plan as outlined in the AOP.

9. Relation to the Settlement's Fish Passage Plan

The Hatchery AOP shall be consistent with the activities planned in the annual work plan to be developed under the Settlement's Fish Passage Plan. This annual work plan and the previous year results will be presented at an annual fisheries workshop where passage studies will be presented. ODFW shall be given a draft of the annual work plan in advance of its preparation of the Hatchery AOP to facilitate preparation of the Hatchery AOP.

If there are conflicts between the Hatchery AOP and the Settlement's Fish Passage Plan's annual work plan, the Parties will attempt to reconcile the plans through discussion between the Licensees' lead fish biologist, ODFW staff, and CTWS Department of Natural Resources (DNR) staff.

10. Periodic Review

Following issuance of the new FERC license, the Licensees and ODFW shall conduct a periodic review of the overall Hatchery program every five (5) years. The Licensees and ODFW shall make the five year Hatchery review available to the Settlement's Fisheries Committee (FC) for review and comment. In addition, the periodic review will be incorporated into the annual fisheries workshop open to the public. If the periodic review finds that the Hatchery program is not meeting the goals of the Settlement Agreement, the FC may recommend the necessary changes to Licensees and to ODFW, which changes would be addressed in ODFW's subsequent draft AOP.

11. Additional Facilities

In addition to any capital improvements provided pursuant to § 4 of this Agreement, the Licensees shall design and construct the following additional facilities, or upgrades to existing Hatchery facilities:

- a. Facilities necessary to implement the reintroduction provisions of the Settlement's Fish Passage Plan. If the Settlement's Fish Passage Plan requires the addition of sockeye production before ODFW had authorized the reduction of chinook and steelhead production at the Hatchery (pursuant to a revised basin management plan), and if no physical capacity is otherwise available at the Hatchery, the Licensees will either: (1) fund sockeye production on an interim basis at another agreed upon location; or (2) build the necessary additional facilities at the Hatchery. The Parties acknowledge and agree that the Hatchery, at current production goals outlined under § 7, is operating at maximum physical capacity.
- b. Facilities necessary for the implementation of the Fish Health provisions of the Settlement's Fish Passage Plan, prior to the implementation of the Settlement's Fish Passage Plan, include:
 - Ponds (temporary or permanent) for holding fish
 - Fish health examination and storage area, including a heated work area to store supplies and equipment for fish health studies (36-50 square ft) and sufficient space for a table, chair, electrical outlets, and access to a sink.
 - Adequate isolation facilities to meet the Settlements Fish Passage Plan requirements.
- c. Changes to the ladder rearing sections necessary to comply with the applicable NPDES permit.
- d. Other changes to the Hatchery:
 - Sound barriers in the offices
 - Improved septic system

- e. Pelton Trap improvements:
 - Heated and lighted work space
 - Motorized hopper gate
 - Repair to truck's plumbing for filling water with flexible hose.
 - Upgraded alarm system

12. Hatchery Operation and Supervision

- a. ODFW shall have sole authority over, and responsibility for, all matters related to employment and supervision of ODFW employees and, except as outlined elsewhere herein, ODFW shall have sole authority over the duties of ODFW employees at the Hatchery. Supervision of the fish production and operation of the Hatchery is the specific responsibility of ODFW and the ODFW Hatchery manager and staff and shall be conducted by ODFW in accordance with the most current industry standards fishery culture and management techniques and industry practices.
- b. ODFW shall provide all necessary training for ODFW employees, including general safety training and training on the specific equipment required for Hatchery operations.
- c. Currently, operation of the Pelton Fish Trap is handled by ODFW. However, it is the intent of the Parties that operation of the Pelton Fish Trap and transportation of any fish shall become the responsibility of the Licensees' Project fisheries staff, to be conducted as described in the Settlement's Fish Passage Plan, and to be subject to state and federal oversight for compliance with the ESA, the Settlement's Fish Passage Plan performance criteria and fish management statutory and administrative rules. Transition of operation and management of the Pelton Fish Trap from ODFW to Licensees' will occur during 2005 (as the Settlement's Fish Passage Plan is initiated) with collection of brood stock for gametes and juvenile fish to be placed in tributaries of the upper basin. Operation of the Pelton Fish Trap and transportation of fish will be coordinated with an ODFW NRS 3-level employee ("NRS 3") and the Hatchery manager to provide appropriate fish for brood stock for the Hatchery and fish passage. The Licensees shall be responsible for the collection, and delivery to ODFW, of the necessary brood stocks to allow ODFW to meet the annual production goals specified herein. The Licensees shall ensure that all fish handling at the Pelton Trap is: (1) conducted in consultation with ODFW and in a manner consistent with the AOP; and (2) conducted in accordance with (a) approved fish culture and management techniques, (b) standard industry practices, and (c) applicable statutory and administrative requirements. The Licensees shall provide all information on fish handling and transportation to ODFW staff within a reasonable time but in any event within ____ days of delivery.
- d. During the "Interim Phase" and the first five years of the "Final Phase" (as those terms are defined in the Settlement Agreement) of the Settlement's Fish Passage Plan, the Licensees shall fund, among other positions, the above referenced NRS 3 position together with associated salary, services and supplies, capital expenses, and vehicle,

under a separate agreement. The position will begin approximately July 1, 2005, concurrent with the initiation of the Fish Health provisions of the Settlement's Fish Passage Plan, for selection of brood stock and passage of gametes, juvenile, and fry to upper basin tributaries. This position may be subject to renewal for additional years beyond the first five years of the Final Phase of the Settlement's Fish Passage Plan as outlined in the separate agreement. The purpose of this position is to provide biological consultation, implementation, and oversight of monitoring and evaluation activities as protection, mitigation, and enhancement programs are implemented under the new FERC license. The Licensees will consult with ODFW through designated staff and the CTWS DNR; and will coordinate with other members of the FC regarding the transfer, disposition, and care of eggs, fry, and juveniles to appropriate water bodies above the Project during the Interim Phase of the Settlement's Fish Passage Plan. In the Final Phase of the Settlement's Fish Passage Plan, the Licensees will consult with ODFW through designated staff and the CTWS DNR; and will coordinate with other members of the FC regarding the allocation of fish numbers and species for fish passage and hatchery broodstock.

13. Fish Health Provisions of the Settlement's Fish Passage Plan

The Licensees shall provide all funding for the Fish Health provisions of the Settlement's Fish Passage Plan. To the extent the Fish Health provisions of the Settlement's Fish Passage Plan affects operation of the Hatchery, Hatchery operations will be coordinated with ODFW Fish Health staff. Sampling of fish for disease assessment will be undertaken by ODFW Hatchery staff, under the supervision of an ODFW fish health specialist.

14. Ladder Rearing Program

As of the date of this Agreement, selected cells of the Pelton fish ladder are being used as rearing ponds for spring chinook, both for fish that are a part of the Licensees' mitigation obligations related to the Project and as a component of the Bonneville Power Administration's Hood River Supplementation Program.

The Licensees agree to maintain these selected fish ladder cells as rearing ponds (grow out facilities) as an extension of the Hatchery so long as volitional passage is not reestablished at the Project. With regard to the fish ladder cells being used for the Hood River Supplementation Program, the Licensees shall continue this program, so long as sufficient Bonneville Power Administration funds are provided for this component of the Hood River Supplementation Program, and so long as volitional upstream passage is not reestablished at the Project.

Unless otherwise agreed to in writing between the Parties, with regard to the spring Chinook rearing associated with the Project, the Licensees shall continue this component of the Hatchery program unless and until upstream volitional passage is reestablished. In that event, the Licensees will consult with ODFW, NOAA Fisheries, and the U.S. Fish and Wildlife Service regarding the future of the ladder rearing program and proposed solutions.

15. Hatchery Houses (TERMS TO BE ADDED IN SUBSEQUENT DRAFT)

16. Permits

- a. For the duration of this Agreement, the Licensees shall be responsible for obtaining, maintaining and complying with all NPDES permits. ODFW as operator of the Hatchery shall familiarize itself with the NPDES permits and shall not willfully engage in operations resulting in NPDES permit violation. ODFW shall not be liable for violations of NPDES permit conditions arising from the need to modify physical Hatchery facilities. When such needs for modification arise, ODFW will consult with Licensee staff to identify Hatchery facility limitations or the modifications to those facilities or other specific Hatchery operations required in order to ensure compliance with NPDES permit conditions.
- b. The Licensees shall be responsible for obtaining and maintaining a Public Pesticide Applicator License and shall be responsible for pesticide and herbicide application at the Hatchery. In no event shall ODFW hatchery personnel apply pesticides or herbicides at the Hatchery, except as provided in §15 14(b)(7) hereof.

17. Reports, Records and Inspections

- a. On or before March 31st of each year, ODFW shall provide the Licensees an annual status report including:
 1. A summary of pertinent Hatchery operating statistics from the previous year;
 2. A comparison of actual Hatchery production figures with projected production goals;
 3. A comparison of actual Hatchery costs with projected costs; and
 4. A listing of all Hatchery equipment and property acquired by ODFW during the year.
- b. ODFW shall use generally accepted accounting procedures to provide accurate and timely recording of receipts, by source, of expenditures made. ODFW shall establish controls adequate to ensure that expenditures charged to activities under the AOP are for allowable purposes and that documentation is readily available to verify that such charges are accurate.
- c. The Licensees may:
 1. Inspect Hatchery operations, facilities, and equipment at all reasonable times;

2. Subject to ORS 192.410 through 192.505 (collectively the “Oregon Public Records Law”), inspect and obtain copies of all records (excluding ODFW personnel records relevant to ODFW’s performance under this Agreement; and
3. Review the accounting methods or procedures used to document direct Hatchery costs.
- d. ODFW shall cooperate fully with such reviews and inspections and shall use reasonable best efforts to make all relevant records (unless otherwise exempt from review as outlined above) available for review and copying by the Licensees within a reasonable time but in any event within 30 days after receipt of a written request from Licensees to review such records. Pursuant to the Oregon Public Records Law, ODFW may charge a reasonable fee for making such relevant records available. The Licensees may, following any such review and inspection, dispute any budget expenditure by ODFW.

18. Ownership and Maintenance of Facilities

- a. Except for real or personal property acquired by ODFW with Non-Licensee funds or other ODFW personal property brought to the Hatchery, title to all existing or newly acquired Hatchery property, Hatchery Houses, fish facilities, and associated equipment necessary for and relating to the Project is retained by or will be the Licensees.
- b. All Hatchery facilities or parts thereof, and associated equipment, shall be maintained or replaced in accordance with prudent operating practice and approved AOPs and annual budgets. The Licensees shall be responsible for maintenance and replacement of all facilities associated with the Hatchery.

19. Indemnification

Subject to the limitations of Article XI, § 7 of the Oregon Constitution and the Oregon Tort Claims Act (ORS 30.260 to 300), ODFW shall indemnify, within the limits and subject to the restrictions in the Oregon Tort Claims Act, the Licensees against any liability for any damage to life or property arising from ODFW’s wrongful acts, or gross negligence provided, however, that ODFW shall not be required to indemnify the Licensees for any such liability arising out of the wrongful acts of the officers, contractors, employees or agents, of the Licensees.

The Licensees shall indemnify the State of Oregon against any liability for personal injury or damage to life or property arising from the Licensees’ wrongful acts, or gross negligence, provided, the Licensees shall not be required to indemnify the State of Oregon for any such liability arising out of wrongful acts, omissions, fault, or negligence, whether active or passive of ODFW or the employees, contractors, or agents of ODFW.

In the event that both ODFW and the Licensees are determined after final non-appealable decision, to be at fault, either through wrongful acts, omissions, or negligence either active or passive, the Parties each expressly agree to indemnify the other in direct proportion to the percentage of fault attributable to the party; provided however, that ODFW's indemnification shall be subject to the limitation of Article XI, §7 of the Oregon Constitution and the Oregon Tort Claims Act (ORS 30.260 to 300). Section

At such time as either party learns of any claim for which it may be entitled to indemnification hereunder, such party shall give prompt written notice of such claim to the other party, and shall furnish such other party with all information pertaining to such claim which is in the possession of or is reasonably available to the party asserting its right to indemnification. The indemnifying party may either defend against the claim itself or require the indemnified party to defend the claim; provided, however, neither Licensees nor any attorney engaged by Licensees shall defend the claim in the name of the State of Oregon or any agency of the State of Oregon, nor purport to act as legal representative of the State of Oregon or any of its agencies, without the prior written consent of the Oregon Attorney General. The indemnified party may, at its election and expense, assume its own defense and settlement in the event that it determines that the indemnifying party is prohibited from defending the indemnified party, is not adequately defending the interests of the indemnified party, or that an important governmental principle is at issue and the indemnified party desires to assume its own defense.

Failure to deliver notice of a claim promptly shall not affect a party's right to indemnification except to the extent the indemnifying party can demonstrate actual prejudice resulting from such delay.

20. Compliance with Applicable Laws and Regulations

All activities of Licensees and ODFW personnel pursuant to this Agreement shall be undertaken in compliance with applicable federal, tribal and state laws and regulations.

21. Assignment

Except to the extent assignment may be required by the terms of the Pelton Round Butte Settlement Agreement between PGE and the CTWS dated _____, this Agreement may not be assigned without prior written approval of each party, and all terms, restrictions, and conditions of this Agreement shall be fully binding on any successor or approved assign.

22. Modification of Agreement

This Agreement may be amended, modified, or supplemented only by a written amendment signed by Licensees and ODFW and that has been reviewed and approved by Oregon Department of Justice and the Oregon Department of Administrative Services, as required by applicable law. No amendment shall be effective until all requisite signatures and approvals have been obtained.

23. Termination

As outlined below and elsewhere herein, either party may terminate this Agreement effective upon delivery of written notice to the other party, or at such later date as may be specified if applicable federal, state, or tribal regulations or guidelines are modified, changed, or interpreted in such a way that the provisions are no longer allowable or appropriate under this Agreement. In addition, ODFW may: (1) at its sole discretion, terminate this Agreement, in whole or in part upon one hundred twenty (120) days prior written notice to Licensees; (2) terminate this Agreement immediately upon prior written notice if ODFW fails to receive funding, appropriations, limitations, allotments, or other expenditure authority as contemplated by ODFW's budget or spending plan and ODFW determines, in its reasonable administrative discretion, that it is necessary to terminate this Agreement; or (3) terminate this Agreement if the Parties fail to reach agreement on an annual budget, an AOP or a material change to either.

24. Rights Cumulative

All rights and remedies of the Parties provided in this Agreement shall not be exclusive and are in addition to any other right and remedies provided by law.

25. Force Majeure

Neither party shall be liable to the other for any failure or delay of performance of any obligations hereunder when such failure or delay shall have been wholly or principally caused by acts or events beyond its reasonable control and without its fault or negligence, including without limitation, acts of God, terrorism, strikes, lockouts, riots, acts of war, epidemics, governmental regulations superimposed after the fact, fire, communication line failures, power failures, earthquakes, floods or other natural disasters ("Force Majeure Events"). Delays in performance due to Force Majeure Events shall automatically extend any applicable dates for a period equal to the duration of such events. In the event such nonperformance continues for a period of 60 days or more, either party may terminate this Agreement by providing written notice thereof to the other party.

26. Successors and Assigns

The provisions of this Agreement shall be binding upon and shall inure to the benefit of the parties hereto and their respective successors and permitted assigns, if any.

27. No Third-Party Beneficiaries

Licensees and ODFW are the only parties to this Agreement and are the only parties entitled to enforce its terms. Nothing in this Agreement gives, is intended to give, or shall be construed to give or provide any benefit or right, whether directly, indirectly, or otherwise, to third persons unless such third persons are individually identified by name herein and expressly described as intended beneficiaries of the terms of this Agreement.

28. Notices

Except as otherwise expressly provided in this Agreement, notices to be given hereunder shall be given in writing by personal delivery of, facsimile transmission of, or mailing the same, postage prepaid, to Licensees or ODFW at the address or number set forth on the signature page of this Agreement or to such other addresses or numbers as the party may hereafter indicate pursuant to this section. Any communication or notice so addressed and mailed shall be deemed to be given five (5) calendar days after mailing. Any communication or notice delivered by facsimile shall be deemed to be given when the transmitting machine generates receipt of the transmission. To be effective against either Party, such facsimile transmission must be confirmed by telephone notice to the receiving party. Any communication or notice by personal delivery shall be deemed to be given when actually received by an authorized representative of the party to whom it is addressed.

29. Severability

The Parties agree that if any term or provision of this Agreement is declared by a court of competent jurisdiction to be illegal, unenforceable or in conflict with any law, the validity of the remaining terms and provisions shall not be affected, and the rights and obligations of the parties shall be construed and enforced as if this Agreement did not contain the particular term or provision held to be invalid.

30. Waiver

The failure of a party to enforce any provision of this Agreement or the waiver of any violation or nonperformance of this Agreement in one instance shall not constitute a waiver of that or any other provision nor shall it be deemed to be a waiver of any subsequent violation or nonperformance. No waiver, consent, modification, or change of terms of this Agreement shall bind either party unless in writing and signed by both parties and all necessary State of Oregon approvals have been obtained. Such waiver, consent, modification, or change, if made, shall be effective only in the specific instance and for the specific purpose given.

31. Headings

The headings in this Agreement are included only for convenience and shall not control or affect the meaning or construction of this Agreement.

32. Integration

This Agreement and attached Exhibits constitute the entire agreement between the parties on the subject matter hereof. There are no understandings, agreements or representations, oral or written, not specified herein regarding this Agreement.

33. No Partnership

This Agreement is not intended, and shall not be construed, to create a partnership or joint venture between Licensees and ODFW. Nothing in this Agreement shall be construed to make Licensees and ODFW partners or joint venture participants

34. Good Faith

In the exercise of rights and the performance of obligations hereunder, and wherever in this Agreement the consent or approval is required of either party, Licensees and ODFW shall each act in good faith. Notwithstanding the previous sentence, the Parties recognize that in managing their respective obligations hereunder, the exercise of judgment and discretion is necessary, and there shall be a strong presumption that the actions taken by each party are reasonable and taken in good faith.

35. Insurance

PGE shall at all times maintain sufficient insurance to cover any claim or liability which may result from any obligation of PGE pursuant to or in any way associated with this Agreement, including without limitation, for any of the forms of legal liability described in §Section ____ and/or §Section ____ of this Agreement.)

36. Tax Certification

By signature on this Agreement, the undersigned hereby certifies, under penalty of perjury that the undersigned is authorized to act on behalf of Contractor and that Contractor is, to the best of the undersigned's knowledge, not in violation of any Oregon Tax Laws. For purposes of this certification, "Oregon Tax Laws" means a state tax imposed by ORS 401.792 to 401.816 and ORS chapters 118, 314, 316, 317, 318, 320, 321 and 323; the elderly rental assistance program under ORS 310.630 to 310.706; and local taxes administered by the Department of Revenue under ORS 305.620.

37. Recycling.

Licensees agree that in performance of this Agreement the Licensees shall comply with the recycling laws and policies of ORS 279.555(1)(e), regarding recycled paper and other natural resources.

***Pelton Round Butte Project
Settlement Agreement***

A P P E N D I X C

DRAFT LAW ENFORCEMENT SERVICE AGREEMENT

Pelton Round Butte Project – FERC No. 2030

July 2004

***Pelton Round Butte Project
Settlement Agreement***

A P P E N D I X C

DRAFT LAW ENFORCEMENT SERVICE AGREEMENT

Pelton Round Butte Project – FERC No. 2030

July 2004

APPENDIX C

Draft Law Enforcement Service Agreement

This Law Enforcement Service Agreement (“Agreement”) is entered into this ___ day of _____, 2004, by and between PORTLAND GENERAL ELECTRIC COMPANY, an Oregon corporation and THE CONFEDERATED TRIBES OF THE WARM SPRINGS RESERVATION, a federally-recognized Indian tribe (collectively the “Joint Applicants”), and JEFFERSON COUNTY, OREGON (“County”), each referred to individually as “Party” and collectively as “Parties.”

RECITALS:

WHEREAS, the Joint Applicants have applied for a new license (“License”) for the Pelton Round Butte Hydroelectric Project, FERC Project No. 2030 (“Project”);

WHEREAS, as part of the application for the Project, the Joint Applicants proposed funding certain law enforcement positions as discussed more fully in this Agreement;

WHEREAS, the License may require the Joint Applicants to enter into this Agreement;

WHEREAS, the County has agreed to provide law enforcement services as set forth in this Agreement; and

WHEREAS, the Joint Applicants have agreed to reimburse the County for costs incurred in providing these services as discussed more fully in this Agreement;

NOW, THEREFORE, in consideration of the mutual promises herein and other good and valuable consideration, the sufficiency and receipt of which is hereby acknowledged, the Parties agree as follows:

Section 1: Provision of Law Enforcement Services

- 1.1 Upon the issuance of the new license, the County shall have the obligation to provide law enforcement services (“Law Enforcement Services”) for all land and water surfaces within and immediately adjacent to the Project. Such law enforcement services shall include patrolling all campgrounds, developed sites or dispersed areas within the Project. Sufficient time will be spent in each area to demonstrate a law enforcement presence in the vicinity.
- 1.2 In order to fulfill its obligation to provide law enforcement services, the County shall, upon the issuance of the new license, take all actions necessary to hire the following law enforcement personnel:
 - (a) one full-time land based Patrol officer; and
 - (b) two seasonal marine Patrol officers.

- 1.3 Law enforcement officers assigned to the Project shall be trained Police Officers accountable to the Jefferson County Sheriff's Office.
- 1.4 Law enforcement officers assigned to the Project and required to operate specialized equipment such as patrol vehicles, boats, and personal watercraft shall be properly trained and certified in the safe operation of such equipment.
- 1.5 The County shall provide all equipment, supplies, training, supervision and material necessary in the performance of its obligations under this Agreement.
- 1.6 In the performance of this contract, the County shall perform all functions and provide all services common to its law enforcement activities including, but not limited to, patrol, investigation, issuing warnings and citations, arrest, appearing in Court, prosecution and incarceration and/or supervision of convicted offenders.

Section 2: Reimbursement for Law Enforcement Services

- 2.1 The Joint Applicants agree to reimburse the County for all costs and expenses reasonably incurred by the County associated with the provision of Law Enforcement Services under this Agreement.
- 2.2 The Joint Applicant's obligation to reimburse the County shall be limited to the following costs and expenses:
 - (a) The full salary, benefits and allocated overhead of one full time, year around, patrol deputy assigned to the Project;
 - (b) the full salary, benefits and allocated overhead of two marine deputies, for six months out of a twelve month fiscal year period for each marine deputy;
 - (c) when the use of a vehicle is required, costs necessary to reimburse the County at the same InternalService Fund rate the County typically charges for Sheriff Patrol vehicles; and
 - (d) training, material and supplies at the County's actual cost.

Section 3: Billing for Law Enforcement Services

- 3.1 Within thirty (30) days of the end of its fiscal year, which is typically June 30, the County shall submit to the Joint Applicants an itemized annual invoice ("Invoice") setting forth all costs and expenses incurred by the County for the provision of Law Enforcement Services pursuant to the terms of this Agreement during such fiscal year.
- 3.2 The Invoice shall be sufficiently detailed to allow the Joint Applicants to verify expenditures incurred by the County for Law Enforcement Services and shall be accompanied by additional documentation supporting such costs and expenses as necessary.
- 3.3 The Joint Applicants shall pay the Invoice within thirty (30) days of receipt of such Invoice. The Joint Applicants may, however, withhold payment of any disputed amount in such Invoice pending resolution of such dispute in accordance with the dispute resolution provisions of Section 5.1 of this Agreement.

- 3.4 The County shall send the Invoice to the Joint Applicants at the address set forth below:

Section 4: Reporting Obligations

- 4.1 Periodically, but not less than once a year, the County shall send to the Joint Applicants a report summarizing all Law Enforcement Services provided pursuant to this Agreement.
- 4.2 The Joint Applicants shall have the right to more detailed reports upon request and shall have the right to review any officer reports or similar documents related to the provision of Law Enforcement Services under this Agreement, except those reports or information that may be legally required to be withheld.

Section 5: Miscellaneous Provisions

5.1 Arbitration

- (a) Any dispute arising out of or relating to this Agreement (“Dispute”) shall be resolved by final and binding arbitration. Arbitration shall be conducted in accordance with the rules of arbitration of the Federal Arbitration Act and, to the extent an issue is not addressed by the federal law on arbitration, by the commercial arbitration rules of the American Arbitration Association.
- (b) Within thirty (30) days of the notice of initiation of the arbitration procedure, Joint Applicants and County shall select one arbitrator. The two arbitrators shall select a third arbitrator. While the third arbitrator shall be neutral, the two appointed arbitrators are not required to be neutral, and it shall not be grounds for removal of either of the two appointed arbitrators or for vacating the arbitrators’ award that either of such arbitrators has past or present minimal relationships with the Party that appointed such arbitrator. To the fullest extent permitted by Applicable Law, any arbitration proceeding and the arbitrators award shall be maintained in confidence by the Parties.
- (c) Each Party agrees that any arbitration award against it may be enforced in any court having jurisdiction and that any judgment on any arbitration award may be entered by any court having jurisdiction. The arbitration proceeding shall be conducted in Madras, Oregon.

- 5.2 **Duration.** This Agreement shall remain in full force and effect from the date of execution until the expiration of the license for the Project.

- 5.3 **Indemnification.** The County shall indemnify and hold harmless the Joint Applicants from and against all costs, losses, liabilities, damages, claims, and expenses (including attorney fees as incurred at trial and on appeal) arising from actions related to the Provision of Law Enforcement Services under this Agreement; provided, however, such indemnification shall not extend to actions taken by the Joint Applicants or actions taken by their individual agents or employees.

- 5.4 **Amendment or Waiver.** This Agreement may be changed, waived, discharged or terminated only by a written agreement signed by all of the Parties to this Agreement. No delay or omission by any party in exercising any right with respect hereto shall

operate as a waiver. A waiver on any one occasion shall not be construed as a bar to, or waiver of, any right or remedy on any future occasion.

- 5.5 Severability. To the extent any provision of this Agreement is prohibited by or invalid under applicable law, such provision shall be ineffective to the extent of such prohibition or invalidity, without invalidating the remainder of such provision or the remaining provisions of this Agreement.
- 5.6 Governing Law. This Agreement shall be construed and interpreted in accordance with the laws of the State of Oregon.
- 5.7 Entire Agreement. This Agreement constitutes the entire agreement between the Parties relating to provision of Law Enforcement Services at the Project.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed under seal as of the date first above written.

JEFFERSON COUNTY, OREGON

By: _____

PORTLAND GENERAL ELECTRIC
COMPANY

By: _____

CONFEDERATED TRIBES OF THE
WARM SPRINGS RESERVATION

By: _____

***Pelton Round Butte Project
Settlement Agreement***

A P P E N D I X D

ROAD MAINTENANCE TERM SHEET

Pelton Round Butte Project – FERC No. 2030

July 2004

***Pelton Round Butte Project
Settlement Agreement***

A P P E N D I X D

ROAD MAINTENANCE TERM SHEET

Pelton Round Butte Project – FERC No. 2030

July 2004

APPENDIX D
TERM SHEET
Road Maintenance Agreement

Parties	Jefferson County, Oregon (“JC”); and The Joint Applicants (“JAs”) (Portland General Electric and Confederated Tribes of the Warm Springs)
Purpose	To specify payments from the JAs to JC for maintenance of Jordan Road and other obligations relating to roads surrounding the Pelton Round Butte Project
Payments from JAs to JC	<p><u>Years 1–5:</u></p> <p>\$500,000 (indexed for inflation) paid to JC within 60 days of the fifth (5th) anniversary of the license issuance and to be used for the prioritized road projects identified by JC</p> <p>OR</p> <p>JAs to complete \$500,000 (indexed for inflation) worth of road improvements based on JC’s prioritized list of road projects within 60 days of the fifth (5th) anniversary of license issuance.</p> <p><u>Years 6–25:</u></p> <p>Payment of \$80,000 per year indexed for inflation (due upon each anniversary of 60 days after license issuance or issuance of license, depending on which payment option is selected for years 1-5). Provided that, any costs incurred for repair of the Jordan Road slide or any other slide shall be deducted from the \$80,000 for the year in which the slide repair occurs.</p> <p><u>Years 26 – end of license term:</u></p> <p>No payments due.</p>
Non-Payment Obligations:	<p>JAs to be solely responsible for maintenance and reconstruction (if any) of Dizney Lane and Pelton Dam Road;</p> <p>JAs to be responsible for any future slides on Jordan Road or other roads adjacent to Lake Billy Chinook or Lake Simtustus;</p> <p>JC to be responsible for maintenance and reconstruction of all roads adjacent to Lake Billy Chinook or Lake Simtustus; provided that JC will not be responsible for 1) any reconstruction or maintenance activities related to Dizney Lane or Pelton Dam Road; or 2) any reconstruction or maintenance activities related to the occurrence of a new slide related to project operations (including any failure of the existing Jordan Road slide). JC shall coordinate any construction activities with the Oregon Parks Department.</p>

***Pelton Round Butte Project
Settlement Agreement***

A P P E N D I X E

***FINAL SECTION 7(A) DETERMINATIONS,
WILD AND SCENIC RIVERS ACT
for the
PELTON ROUND BUTTE HYDROELECTRIC PROJECT:***

***Lower Deschutes Wild and Scenic River
Middle Deschutes and Lower Crooked River Wild and
Scenic Rivers
Metolius River Wild and Scenic River***

Pelton Round Butte Project – FERC No. 2030

July 2004

***Pelton Round Butte Project
Settlement Agreement***

A P P E N D I X E

***FINAL SECTION 7(A) DETERMINATIONS,
WILD AND SCENIC RIVERS ACT
for the
PELTON ROUND BUTTE HYDROELECTRIC PROJECT:***

***Lower Deschutes Wild and Scenic River
Middle Deschutes and Lower Crooked River Wild and
Scenic Rivers
Metolius River Wild and Scenic River***

Pelton Round Butte Project – FERC No. 2030

July 2004

APPENDIX E

FINAL SECTION 7(a) DETERMINATIONS, WILD AND SCENIC RIVERS ACT

Pelton Round Butte Hydroelectric Project #2030
July 2, 2004

Introduction

The Pelton Round Butte Hydroelectric Project is located on the east side of the central Cascade mountain range in Jefferson County, Oregon, approximately 15 miles west of the city of Madras, Oregon. The project consists of a series of three dams on the Deschutes River that impound the canyons of the Deschutes, Metolius and Crooked River. The three dams include the upstream most Round Butte Dam, Pelton Dam and the Reregulating Dam.

The accompanying report analyzes the effects of the Pelton Round Butte Hydroelectric Project as it is proposed to operate under the License Conditions recommended in the Settlement Agreement (July 13, 2004) for Pelton Round Butte Hydroelectric Project #2030. Specifically, the analysis considers whether the project proposal will invade the area or unreasonably diminish the scenic, recreational, fish or wildlife values present at the date of the lower Deschutes WSR designation.

On November 12, 2002, the USDI Bureau of Land Management and USDA Forest Service filed preliminary Section 7 determinations with their preliminary conditions, prescriptions, and recommendations in response to the Commission's August 12, 2002, Notice of Application Ready for Environmental Analysis and Soliciting Comments, Recommendations, Terms and Conditions, and Prescriptions for the Project (REA notice). At that time, the agencies reserved the authority to modify the preliminary determinations in the event that alternatives considered by the Commission modified the project or otherwise created impacts to the Wild and Scenic River not previously addressed.

The License Conditions contained in the Settlement Agreement resulted in a change to the minimum flows assessed in the preliminary determination for the Lower Deschutes Wild and Scenic River. No changes were made to the Middle Deschutes, Crooked, or Metolius Wild and Scenic River preliminary Section 7 determinations.

Should the Commission modify the License Conditions recommended in the Settlement Agreement, the USDI BLM and the USDA Forest Service continue to reserve the authority to modify the these determinations in the event that license conditions imposed by the Commission are materially different from those proposed in this Settlement Agreement such that the project creates or results in impacts to the Wild and Scenic River not previously addressed

Lower Deschutes Wild and Scenic River

Background

With the passage of the Omnibus Oregon Wild and Scenic Rivers Act of 1988, Congress designated the lower 100 miles of the Deschutes River as a recreational river area. The 100 mile segment from the Pelton Re-regulating Dam to the confluence with the Columbia River was recognized as having outstandingly remarkable recreation, fisheries, wildlife, cultural, geological, scenic, and botanical values. The Bureau of Land Management, State of Oregon, and Confederated Tribes of the Warm Springs Indian Reservation are responsible for the administration of the lower Deschutes Wild and Scenic River (WSR) and for protecting the outstandingly remarkable values. The same 100-mile segment was also designated as an Oregon State Scenic Waterway in 1970.

Lower Deschutes WSR:

The outstandingly remarkable values of the Lower Deschutes WSR are: recreation, fisheries, wildlife, cultural, geological, scenic, and botanical. More specifically from the Lower Deschutes WSR Environmental Impact Statement, Section III:

Recreational Values – The Deschutes offers diverse opportunities for recreation which attract visitors from many states and a few foreign countries. The fishery for native redds (rainbow) trout, steelhead and salmon has been internationally known for many years. Whitewater boating participation has grown rapidly in the last ten years. The river provides a stable, high-volume flow, available for recreation all year long. Within its 100-mile length, there are distinct segments favored for relaxed, overnight camping and fishing floats, one-day white water adventures and guided or nonguided fishing trips. The climate cooperates by offering generally sunny weather during the high-use season.

Fishery Values – The lower Deschutes River has an internationally known fishery for resident rainbow trout, anadromous steelhead trout, and chinook salmon. Even though production of wild anadromous fish is depressed, the river is an important producer of steelhead and chinook salmon for the Columbia River system and the Northwest Region. There is also a regionally unique run of wild sockeye salmon that is sustained by the incidental passage of kokanee smolts through the turbines at the Pelton/Round Butte hydroelectric complex. Runs of anadromous fish sustain an important subsistence fishery for Native Americans. The river provides extensive spawning and rearing areas for both resident and anadromous fish. Good water quality conditions contribute significantly to the condition of the fishery. Two hatcheries are located in the subbasin and supplement the runs of chinook and steelhead.

Wildlife Values – The Deschutes River Canyon provides habitat for approximately 300 different species of wildlife. Most of these utilize riparian habitats adjacent to the river. This provides outstanding opportunities for viewing many species of wildlife include songbirds, waterfowl, mink, heron, mule deer and many reptiles, amphibians, and other small mammals.

Two birds found in the canyon have been listed by Federal and State agencies as Threatened or Endangered. They are the bald eagle, *Haliaeetus leucocephalus* and the peregrine falcon, *Falco peregrinus anatum*. The falcon currently passes through the area and is expected to begin nesting in the canyon as populations continue to increase in the Columbia basin in the future. The Osprey, *Pandion haliaetus*, which is listed as sensitive in Oregon, is also known to nest in the canyon.

Two species of molluscs (snails) found in the planning area are Federal candidates for listing as Threatened. They are The Dalles sideboard snail, *Monadenia fidelis minor* and the shortface *lanx Fisherola nuttalli nuttalli*.

Cultural Resource Values - Prehistoric - Humans have occupied the Deschutes Canyon area for at least 10,000 years. One hundred thirty-five prehistoric sites have been recorded in the Lower Deschutes River canyon, and it is believed that many others will yet be found. Most common are habitation sites. One of these, at Macks Canyon campground, was excavated by University of Oregon archaeologists in the late 1960s and is now listed on the National Register of Historic Places. Sherars Falls, a point of difficult passage for anadromous fishes, is an important traditional fishing station for Native Americans.

Cultural Resource Values – Historic – Exploration and fur trapping by Euro-Americans began in the Deschutes Canyon in the early 19th century. Other historic activities that have been documented include use of the Oregon Trail, road and railroad construction and settlement. In the Deschutes canyon 38 historic sites have been documented, most of them associated with early railroad construction.

Geologic Values – The Deschutes River flows through the geomorphic unit called the Deschutes-Umatilla Plateau, the main part of which slopes northward from 4,000-foot levels in the mountains of Central Oregon to the 400-foot elevation along the Columbia River. The rocks are mostly Columbia River basalt, nearly 2,000 feet thick. The lava flows that make up the plateau occurred over millions of years and formed in distinct layers of various depths.

Scenic Values – The Lower Deschutes River Canyon contains a diversity of landforms, vegetation and color. The river, having carved a canyon nearly 2,000 feet deep in many locations out of rugged Columbia River basalt flows, provides a dramatic and diverse landscape. The clear water of the river framed by the green riparian vegetative fringe creates a stark contrast to the often barren and broken reddish and brown cliffs and hillsides of the canyon. The river provides a boater with a moving platform for viewing the ever-changing scene. While transportation corridors exist (roads and railroads), and occupational and rural development has occurred in several areas, they are overshadowed by the magnitude and beauty of the river and canyon character.

Botanical Values – Plant communities in the Deschutes River Canyon fall into four broad categories. In the high desert uplands there are big sagebrush, juniper-big sagebrush and bunchgrass types. Along the river there is a thin band of riparian vegetation dominated by alders. Within the canyon there are also six special status plant species (known or suspected to occur). These are: *Astragalus howellii* v. *howellii*, *Astragalus tyghensis*, *Cyperus rivularis*,

Lomatium farinosum v. hambleniae, *Mimulus jungermannioides* and *Talinum spinescens*. *Astragalus tyghensis* is the only species that is presently a Federal candidate species for listing as threatened and endangered.

Existing Project Description:

The Pelton Round Butte Hydroelectric Project (FERC #2030) is located on the Deschutes River, approximately 8 miles west of the city of Madras, Oregon. Pelton Round Butte consists of a three-dam complex with associated powerhouses. Individual descriptions follow.

Round Butte Dam is a 440-foot high rock fill dam that impounds Lake Billy Chinook, a 4,000 surface acre reservoir. The powerhouse at Round Butte Dam has a capacity of 300 MW. Pelton Dam is a 204-foot high, concrete radial arch structure, and impounds Lake Simtustus, a 540 surface acre reservoir. The Pelton powerhouse has a generation capacity of 108 MW. The lowest of the three dams is the Pelton Reregulating Dam, an 88 foot high concrete and rock filled structure with a powerhouse capacity of 19 MW. The Reregulating Dam impounds the 190 surface acre Reregulating Reservoir. The three dams and powerhouses are jointly owned and operated by PGE and the Confederated Tribes of Warm Springs. The two upper dams are managed as peaking facilities with the lower dam managed as a reregulating facility and operated to provide both energy production and reregulate flows in the lower Deschutes River. Additional project structures include fish facilities such as the Pelton Fish Ladder, currently used for rearing spring chinook, retired fish passage facilities at the Round Butte and Pelton dams, Round Butte Hatchery at the base of Round Butte Dam, and the Bethel-Round Butte transmission line which extends 100 miles from the project over the Cascade Mountains to PGE's substation near Salem.

The three-dam complex, powerhouses, and operation of project facilities significantly affect fish resources of the Deschutes River basin. Wild fish populations which presently inhabit the Deschutes River and tributaries in the lower basin below the project include spring and fall chinook salmon, summer steelhead and native redband trout, bull trout, Pacific lamprey and mountain whitefish. Resident salmonids above the project include redband trout, bull trout, brown trout, and kokanee.

The project is run in a modified run of the river mode, with Round Butte Dam and Pelton Dam operations managed for peak generation and the Reregulating Dam managed to release steady flow to the river downstream. Outflow from the Reregulating Dam is managed to generally mimic inflow to the project. Ramping rates are not specified in the existing license but are the result of an agreement between PGE and recreational anglers and guide/outfitters. Under this agreement, ramping rates are not to exceed 0.1 ft/hr and 0.4ft/day in the winter and 0.1 ft/hr and 0.2 ft/day in the summer. The reservoir level of Lake Billy Chinook (LBC) is limited to within one foot of full pool from June 16th to September 15th. Winter reservoir levels are limited to an 80ft drawdown, but it is usually only 20ft or less. Fish passage at the project was attempted when the dams were built but was abandoned when downstream passage for juvenile smolts through LBC was shown to be unsuccessful in the late 1960's. A hatchery was built at the base of Round Butte Dam to mitigate the loss of fish passage at the complex. Cooperative fish habitat projects were completed jointly with Portland General Electric, ODFW and USFS in the Metolius River and its tributaries in the 1980s and 1990s. Wood from the Metolius River was

collected after the 1996 flood and some of that wood was secured to the shoreline of Lake Billy Chinook. Some small riparian planting projects were attempted along Lake Billy Chinook with limited success. In the past few years temporary downstream fish screw traps have been run in the rivers flowing into Lake Billy Chinook to monitor movements of fish into the reservoir.

Proposed Project Operations:

The Settlement Agreement and Proposed License Conditions (July 13, 2004) for the project propose that the project be operated as a modified run of the river, with Round Butte Dam and Pelton Dam operations managed for peak generation and the Reregulating Dam managed to release a steady outflow that is regulated to be $\pm 10\%$ of the average daily inflow. Monthly average target flows are based on the State Instream Flow Water Right Certificate unless inflow is less than target. In this case, inflow becomes the target flow. There are allowances for dropping outflow 150cfs below inflow to refill Lake Billy Chinook and maintain the summer operating level within the top foot between May 15 and September 15. In low flow conditions, up to four feet of storage may be used to maintain flows at or above 3000 cfs between May 15 and September 15 to protect spawning chinook. Ramping rates will be more restrictive in the new license, with summer rates proposed at 0.05 ft/hr and 0.2 ft/day and winter rates set at 0.1 ft/hr and 0.4 ft/day. Winter drawdown will not exceed 20 ft.

Fish passage is proposed in the new license, with a selective withdrawal tower built to create surface flow attraction for smolt collection at Round Butte Dam. Temporary traps at the tributary river mouths will be used to monitor smolt migration into the reservoir in the short term or initial phase of fish passage. Wood from the reservoir would be collected and transferred to the Lower Deschutes River for fish habitat. A program of habitat enhancements is scheduled to be implemented on Trout Creek and the Metolius, Middle Deschutes and Lower Crooked Rivers and their tributaries. Stream gages near the mouths of the Metolius River, Middle Deschutes and Lower Crooked River will be updated to have real time links to provide improved inflow monitoring for flow matching for outflow operations. Gravel augmentation in the reach between the Reregulating Dam and Shitike Creek will begin on an experimental basis in the new license.

Section 7 Requirements

Section 7(a) of the WSRs Act provides specific standard for review of developments below or above a designated river.

Developments below or above a designated river may occur as long as the project “will not invade the area or unreasonably diminish the scenic, recreational, and fish and wildlife values present in the area as of the date of designation. This standard applies to projects outside the river corridor but on the same river or tributary.

The Pelton Reregulating Dam marks the upper termini of the lower Deschutes WSR, with the lower termini located at the confluence with the Columbia River. Conditions and operating mode at the date the river was added to the WSR System (October 1988) will be the basis for evaluating the project proposal.

The initial question to be addressed is whether the project proposal invades the designated river. The term invade is defined as encroachment or intrusion upon.

The next question to be answered, relative to the standard in Section 7(a), is whether the project proposal will “unreasonably diminish” any specified values. Given that the standard implies some diminution of values may be acceptable, there are two questions to consider:

1. Does the proposed project cause diminution of the scenic, recreational, fish or wildlife values of the designated river as present at the date of designation?
2. If there is diminution, is it unreasonable? This would suggest an evaluation of the magnitude of the loss. Factors to be considered include: (1) Whether the value contributed to the designation of the river (i.e., outstandingly remarkable); and, (2) the current condition and trends of the resource. (If the diminution is determined unreasonable, measures may be recommended to reduce adverse effects to within acceptable levels.)

Rational For Determination

The basis for this preliminary Section 7(a) determination is the project as described in the Settlement Agreement and proposed License Articles (July 13, 2004) prepared by Portland General Electric and the Confederated Tribe of the Warm Springs Reservation of Oregon.

The BLM, as the Federal land manager for the lower Deschutes WSR, has utilized staff knowledge and considerable additional available data. The Forest Service has been a participant with various interdisciplinary teams and a cooperator in review of this information. The accompanying Section 7(a) Report summarizes the results of this review and evaluation.

Determination

The licensee does not propose construction of any new project works in the WSR corridor; therefore, the project proposal will not invade the area.

As to whether the project proposal will cause diminution of the values stated in Section 7(a), determinations were grouped by scenery and wildlife, and fisheries and recreation due to their similarities.

Scenery and Wildlife:

The project proposal has not been significantly modified from the current license, which existed at the date of the rivers designation. The flow modifications proposed (minimum monthly average target flows, or inflow, whichever is less) and selective withdrawal are not expected to cause diminution of the above values. We therefore, find the effects from the project proposal to the Lower Deschutes WSR do not rise to the level of unreasonable diminishment for Scenery or Wildlife values.

Recreation and Fisheries:

The project proposal allows the applicants to go below the current minimum of 3000 cfs when inflow is less than 3000 cfs. No studies to date have analyzed the effects of going below 3000 cfs on fisheries and recreational ORVs. The recreation and fisheries ORVs are based on maintaining flow regime that existed at the time of designation - minimum flows of 3000 cfs in the summer and winter and 3500 cfs in the springtime, but the project can only maintain outflows that are less than inflows at the expense of the storage reservoirs. The proposed license articles approach the limits of how lower river flows can be protected via project operations, as the real risk to maintaining minimum flows in the Lower Deschutes is caused by climatic change and/or future water development in the basin above the project. The proposed selective withdrawal will more closely match the without-project temperature regime and is not expected to degrade fisheries habitat. The project will continue, however, to alter sediment regimes (large wood, gravel). While the sediment condition will persist throughout the term of a new license, it existed at the date of the river's designation. We, therefore, find the negative effects from the project proposal to the lower Deschutes WSR do not rise to the level of unreasonable diminishment, provided that the Commission adopts the proposed license articles in their entirety.

Section 7(a) Report

Scenery

Background:

The Lower Deschutes WSR Management Plan states that the Lower Deschutes River Canyon contains a diversity of landforms, vegetation and color. The river, having carved a canyon nearly 2,000 feet deep in many locations out of rugged Columbia River basalt flows, provides a dramatic and diverse landscape. The clear water of the river framed by the green riparian vegetative fringe creates a stark contrast to the often barren and broken reddish and brown cliffs and hillsides of the canyon. The river provides a boater with a moving platform for viewing the ever-changing scene. While transportation corridors exist (roads and railroads) and occupational and rural development have occurred in several areas, they are overshadowed by the magnitude and beauty of the river and canyon character

The Deschutes River flows through the geomorphic unit called the Deschutes-Umatilla Plateau, the main part of which slopes northward from 4,000-foot levels in the mountains of Central Oregon to the 400-foot elevation along the Columbia River. The rocks are mostly Columbia River basalt, nearly 2,000 feet thick. The lava flows that make up the plateau occurred over millions of years and formed in distinct layers of various depths.

Plant communities in the Deschutes River Canyon fall into four broad categories. In the high desert uplands there are big sagebrush, juniper-big sagebrush and bunchgrass types. Along the river there is a thin band of riparian vegetation dominated by alders. Within the canyon there are also six special status plant species (known or suspected to occur). These are: *Astragalus howellii* v. *howellii*, *Astragalus tyghensis*, *Cyperus rivularis*, *Lomatium farinosum* v. *hambleniae*,

Mimulus jungermannioides and *Talinum spinescens*. *Astragalus tyghensis* is the only species that is presently a Federal candidate species for listing as threatened and endangered.

Resource Evaluation:

The current operation is a modified run of the river. The scenic values were based on the current operation. The proposed operation has the potential to lower flows below the current 3000 cfs minimum. Flows are not expected to drop below 2500 cfs due to spring fed flows of the Metolius River and the Opal Springs Complex. The proposed selective withdrawal will more closely mimic the without-project temperature regime.

The proposed changes for the new license are not predicted to change the scenic quality of the river corridor. Scenic qualities described in the lower Deschutes WSR are expected to be the same as the time the river was designated.

Recreation

Background:

The Deschutes offers diverse opportunities for recreation that attract visitors from many states and a few foreign countries. The fishery for native reddsides (rainbow) trout, steelhead and salmon has been internationally known for many years. Whitewater boating participation has grown rapidly in the last ten years. The river provides a stable, high-volume flow, available for recreation all year long. Within its 100-mile length, there are distinct segments favored for relaxed, overnight camping and fishing floats, one-day white water adventures and guided or nonguided fishing trips. The climate cooperates by offering generally sunny weather during the high-use season.

The Deschutes River Canyon provides habitat for approximately 300 different species of wildlife. Most of these utilize riparian habitats adjacent to the river. This provides outstanding opportunities for viewing many species of wildlife include songbirds, waterfowl, mink, heron, mule deer and many reptiles, amphibians, and other small mammals.

Resource Evaluation:

The primary forms of recreation are boating, fishing, and sightseeing. With the exception of boating, these values will not be negatively impacted by the proposed flow and temperature changes. A new fishery could be established if sockeye reintroduction is successful. Boating could be affected at times if outflow is less than 3000 cfs. These lower flows could expose boulders and make passage through rapids more difficult.

Habitat enhancements proposed for the watershed will fit into the existing natural character of the river and at the time of designation. Fish passage projects will increase the recreational opportunities in the corridor.

Fish

Background:

The Lower Deschutes River has an internationally known fishery for resident rainbow trout, anadromous steelhead trout, and anadromous chinook salmon. Even though production of wild anadromous fish is depressed, the river is an important producer of steelhead and chinook salmon for the Columbia River system and the Northwest Region. There is also a regionally unique run of wild sockeye salmon that is sustained by the incidental passage of kokanee smolts through the turbines at the Pelton/Round Butte hydroelectric complex. Runs of anadromous fish sustain an important subsistence fishery for Native Americans. The river provides extensive spawning and rearing areas for both resident and anadromous fish. Good water quality conditions contribute significantly to the condition of the fishery. Two hatcheries are located in the subbasin and supplement the runs of Chinook and steelhead.

Redband trout, a state and federal sensitive species inhabit the Lower Deschutes and its tributaries. This population is managed as a wild trout fishery.

Bull trout, listed as threatened under the Endangered Species Act are found from the Reregulating Dam to Sherars Falls. Most of these fish spawn and rear in tributaries located on the Warm Springs Indian Reservation. Some fish do successfully pass through the three-dam complex from Lake Billy Chinook. The Lower Deschutes River provides subadult and adult foraging but no known spawning occurs.

Summer Steelhead, listed as threatened under the Endangered Species Act are found throughout the 100 miles of the Lower Deschutes River and many of its tributaries.

Resource Evaluation:

The proposed wood placement will benefit the fisheries resource by providing a structure source that was lost with project construction.

The proposed selective water withdrawal should not have a negative effect on the fisheries resource. The selective withdrawal will mimic water temperature conditions that would exist if the project were not in place. Currently water temperatures are cooler in the spring and warmer in the fall due to the project. The selective withdrawal will return water temperatures to a more natural temperature regime.

The proposal for monthly average target flows or inflow, whichever is less, rather than the current minimum flow requirement, has the potential to negatively impact the fisheries resource. However, the proposed license articles approach the limits of how lower river flows can be protected via project operations, as the real risk to maintaining minimum flows in the Lower Deschutes is caused by climatic change and/or future water development in the basin above the project.

The flow record for inflow from 1923 to 2000 shows that 99.9% of the time flows were at or above 3000 cfs. Only 30 days in the 77-year period did inflow drop below 3000 cfs.

Wildlife

Background:

The Deschutes River Canyon provides habitat for approximately 300 different species of wildlife. Most of these utilize riparian habitats adjacent to the river. This provides outstanding opportunities for viewing many species of wildlife include songbirds, waterfowl, mink, heron, mule deer and many reptiles, amphibians and other small mammals.

Two birds found in the canyon have been listed by Federal and State agencies as Threatened or Endangered. They are the bald eagle, *Haliaetus leucocephalus* and the peregrine falcon, *Falco peregrinus anatum*. The falcon currently passes through the area and is expected to begin nesting in the canyon as populations continue to increase in the Columbia basin in the future. The Osprey, *Pandion haliaetus*, which is listed as sensitive in Oregon, is also known to nest in the canyon.

Two species of molluscs (snails) found in the planning area are Federal candidates for listing as Threatened. They are The Dalles sideboard snail, *Monadenia fidelis minor* and the shortface *lanx Fisherola nuttalli nuttalli*.

Resource Evaluation:

Ninety five percent of the wildlife in the Lower Deschutes basin depends on riparian habitats for all or a portion of their life cycle. The proposed project changes should not affect the riparian habitat. Proposed large wood placement should benefit some wildlife species by providing perching and foraging habitat.

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Middle Deschutes and Lower Crooked River Wild and Scenic Rivers

Introduction

The Pelton Round Butte Hydroelectric Project is located on the east side of the central Cascade mountain range in Jefferson County, Oregon, approximately 15 miles west of the city of Madras, Oregon. The project consists of a series of three dams on the Deschutes River that impound portions of the canyons of the Deschutes, Metolius and Crooked Rivers. The three dams include Round Butte Dam (the upstream most), Pelton Dam and the Reregulating Dam.

With the passage of the Omnibus Oregon Wild and Scenic Rivers Act of 1988, Congress designated the 20 miles of the Middle Deschutes River from Odin Falls to the stream gage just upstream of Lake Billy Chinook as a Scenic River segment. At the same time, Congress designated 9.8 miles of the Lower Crooked River from the National Grasslands boundary near Ogden wayside to Opal Springs as a Recreational River segment. The Middle Deschutes River was designated as having outstandingly remarkable geology, hydrology, botany, scenery, wildlife, recreation, fisheries and cultural resource values. The Lower Crooked River was designated having outstandingly remarkable geology, hydrology, botany, scenery, wildlife, and recreation resource values. The Secretary of the Interior has given the Bureau of Land Management the responsibility for administering these rivers, together with the USDA Forest Service (Ochoco National Forest) and Oregon State Parks and Recreation Department. These agencies are responsible for management of the Middle Deschutes Wild and Scenic River (WSR) and for protecting its free-flowing condition, water quality and outstandingly remarkable values. In addition to its status as a National Wild and Scenic River, the segment of the Middle Deschutes River from Sawyer Park in Bend to Lake Billy Chinook is also designated as an Oregon State Scenic Waterway.

The accompanying report analyzes the effects of the Pelton Round Butte Hydroelectric Project as it is proposed to operate under the License Conditions recommended in the Settlement Agreement (July 13, 2004)e for Pelton Round Butte Hydroelectric Project #2030. Specifically, the analysis considers whether the project proposal will invade the area or unreasonably diminish the scenic, recreational, fish or wildlife values present at the date of the WSR designation.

Background

Outstandingly Remarkable Values

The outstandingly remarkable values of the Middle Deschutes River are geology, hydrology, botany, scenery, wildlife, recreation, fisheries and cultural resource values. The outstandingly remarkable values of the Lower Crooked River are geology, hydrology, botany, scenery, wildlife, and recreation values. More specifically from the Middle Deschutes/Lower Crooked WSR Final Environmental Assessment:

Hydrology – The increase in water from springs and stability of flows along with the steep basalt canyons in both corridors has created a stream habitat and riparian zone that is

extremely stable and diverse. This combination of an excellent riparian zone and stable stream flows is unique in a dry semi-arid climate. Features such as Odin, Big, and Steelhead Falls; springs and seeps; white water rapids; water sculptured rocks; and the river canyons themselves are very prominent and represent excellent examples of the hydrologic activity within Central Oregon.

Geology- The geologic history of the past 50 million years is dramatically displayed on the canyon walls of the Middle Deschutes and Lower Crooked Rivers. A number of volcanic eruptions occurred over thousands of years to create a large basin comprised of a variety of colorful layered basalt, ash, and sedimentary formations. The Deschutes and Crooked Rivers dissect this basin providing a unique study area for geologic interpretation and support scenic values. A significant contribution to the outstanding value of these canyons is the unique inter-canyon basalt formations created by recurring volcanic and hydrologic activities.

Botany – Botanical resources within all river segments are in an ecological condition unusual for similar areas within the region and contain (or suspected to contain in the Lower Crooked River) Estes' Wormwood (*Artemisia Ludoviciana* ssp. *estesii*). This species is a Candidate species under the Endangered Species Act and is classified as threatened/endangered throughout its range (list 1) by the Oregon Natural History Data Base. The Lower Crooked River has a unique stand of mature white adler/red-osier dogwood in an area that is in near pristine condition.

Wildlife – A wide variety of wildlife species, critical mule deer winter range habitat and nesting/hunting habitat for bald eagle, golden eagle, osprey and other raptors classifies wildlife resources in both river corridors as outstandingly remarkable. The bald eagle is known to winter along the Deschutes River downstream from Lower Bridge and also within the Lower Crooked River segment. Outstanding habitat includes high vertical cliffs, wide talus slopes, numerous caves, pristine riparian zones and extensive grass/sage covered slopes and plateaus.

Scenery – The scenic quality of the Middle Deschutes/Lower Crooked Rivers is distinctive due to the rugged natural character of the canyons, outstanding scenic vistas, limited visual intrusions, high scenic quality and scenic diversity resulting from a variety of geologic formations, vegetation communities and dynamic river characteristics.

Recreation – Although relatively inaccessible in many areas, these canyons offer a diversity of year-round semi-primitive recreation opportunities such as fishing, hiking, backpacking, camping, wildlife and nature observation, expert kayaking and rafting, picnicking, swimming, hunting and photography. Many resources within the corridors are unique to the region and have high educational values.

Fishery – In segment 4 of the Middle Deschutes River, the quality and importance of the fisheries habitat and its resulting diversity of resident and remnant anadromous species qualifies this resource to be outstandingly remarkable. A BLM survey identified fishing as the number one recreation activity within both river corridors. Stories and pictures of huge catches are found in historical records from the early 1900's. Based upon the potential for

the long-term restoration of fish habitat and populations, the fishery in Segment 3 and in the Lower Crooked River may later be determined to be outstandingly remarkable.

Cultural Resources – Cultural resources are notably outstanding on the Middle Deschutes River based on the combination of prehistoric and historic sites found along the corridor and the traditional uses associated with the area. Evidence that rare and/or special activities took place in the river canyon areas includes lithic scatters or flaking stations, shell middens, rockshelters, rock features, and rock art. These sites contribute to the understanding and interpretation of prehistory of the Deschutes River and the region and are considered to be eligible for inclusion in the National Register of Historic Places. Cultural resources on the Lower Crooked River may later be determined to be outstandingly remarkable after further comprehensive studies.

Existing Project Description:

The Pelton Round Butte Hydroelectric Project (FERC #2030) is located on the Deschutes River, approximately 8 miles west of the city of Madras, Oregon. Pelton Round Butte consists of a three-dam complex with associated powerhouses. Individual descriptions follow.

Round Butte Dam is a 440-foot high rock fill dam that impounds Lake Billy Chinook, a 4,000 surface acre reservoir. The powerhouse at Round Butte Dam has a capacity of 300 MW. Pelton Dam is a 204-foot high, concrete radial arch structure, and impounds Lake Simtustus, a 540 surface acre reservoir. The Pelton powerhouse has a generation capacity of 108 MW. The lowest of the three dams is the Pelton Reregulating Dam, an 88 foot high concrete and rock filled structure with a powerhouse capacity of 19 MW. The Reregulating Dam impounds the 190 surface acre Reregulating Reservoir. The three dams and powerhouses are jointly owned and operated by PGE and the Confederated Tribes of Warm Springs. The two upper dams are managed as peaking facilities with the lower dam managed as a reregulating facility and operated to provide both energy production and reregulate flows in the lower Deschutes River. Additional project structures include fish facilities such as the Pelton Fish Ladder, currently used for rearing spring chinook, retired fish passage facilities at the Round Butte and Pelton dams, Round Butte Hatchery at the base of Round Butte Dam, and the Bethel-Round Butte transmission line which extends 100 miles from the project over the Cascade Mountains to PGE's substation near Salem.

The three-dam complex, powerhouses, and operation of project facilities significantly affect fish resources of the Deschutes River basin. Wild fish populations which presently inhabit the Deschutes River and tributaries in the lower basin below the project include spring and fall chinook salmon, summer steelhead and native redband trout, bull trout, Pacific lamprey and mountain whitefish. Resident salmonids above the project include redband trout, bull trout, brown trout, and kokanee.

The project is run in a modified run of the river mode, with Round Butte Dam and Pelton Dam operations managed for peak generation and the Reregulating Dam managed to release steady flow to the river downstream. Outflow from the Reregulating Dam is managed to mimic inflow to the project in general. Minimum flows are set at 3000 cfs in the summer and winter and at 3500 cfs in the springtime. Ramping rates are not specified in the existing license but are the

result of an agreement between PGE and recreational anglers and guide/outfitters. Under this agreement, ramping rates are not to exceed 0.1 ft/hr and 0.4ft/day in the winter and 0.1 ft/hr and 0.2 ft/day in the summer. The reservoir level of Lake Billy Chinook (LBC) is limited to within one foot of full pool from June 16th to September 15th. Winter reservoir levels are limited to an 80ft drawdown, but are commonly only 20ft or less. Fish passage at the project was attempted when the projects were built but was abandoned when downstream passage for juvenile smolts through LBC was shown to be unsuccessful in the late 1960's. A hatchery was built at the base of Round Butte Dam to mitigate the loss of fish passage at the complex. Cooperative fish habitat projects were completed jointly with Portland General Electric, ODFW and USFS in the Metolius River and its tributaries in the 1980s and 1990s. Wood from the Metolius River was collected after the 1996 flood and some of that wood was secured to the shoreline of Lake Billy Chinook. Some small riparian planting projects were attempted along Lake Billy Chinook with limited success. In the past few years temporary downstream fish screw traps have been run in the rivers flowing into Lake Billy Chinook to monitor movements of fish into the reservoir.

Proposed Project Operations:

The Settlement Agreement and Proposed License Conditions (July 13, 2004) for the project propose that the project be operated as a modified run of the river, with Round Butte Dam and Pelton Dam operations managed for peak generation and the Reregulating Dam managed to release a steady outflow that is regulated to be +/- 10% of the average daily inflow. Monthly average target flows are based on the State Instream Flow Water Right Certificate unless inflow is less than target. In this case, inflow becomes the target flow. There are allowances for dropping outflow 150cfs below inflow to refill Lake Billy Chinook and maintain the summer operating level within the top foot between May 15 and September 15. In low flow conditions, up to four feet of storage may be used to maintain flows at or above 3000 cfs between May 15 and September 15 to protect spawning chinook. Ramping rates will be more restrictive in the new license, with summer rates proposed at 0.05 ft/hr and 0.2 ft/day and winter rates set at 0.1 ft/hr and 0.4 ft/day. Winter drawdown will not exceed 20 ft.

Fish passage is proposed in the new license, with a selective withdrawal tower built to create surface flow attraction for smolt collection at Round Butte Dam. Temporary traps at the tributary river mouths will be used to monitor smolt migration into the reservoir in the short term or initial phase of fish passage. Wood from the reservoir would be collected and transferred to the Lower Deschutes River for fish habitat. A program of habitat enhancements is scheduled to be implemented on Trout creek and the Metolius, Middle Deschutes and Lower Crooked Rivers and their tributaries. Stream gages near the mouths of the Metolius River, Middle Deschutes and Lower Crooked River will be updated to have real time links to provide improved inflow monitoring for flow matching for outflow operations. Gravel augmentation in the reach between the Reregulating Dam and Shitike Creek will begin on an experimental basis in the new license.

SECTION 7 REQUIREMENTS

Section 7(a) of the WSRs Act provides a specific standard for review of developments below or above a designated river.

Developments below or above a designated river may occur as long as the project "will not invade the area or unreasonably diminish the scenic, recreational, and fish and wildlife values present in the area as of the date of designation.

This standard applies to projects located outside the river corridor itself but on the same river or tributary, as is the case with both the Middle Deschutes and Lower Crooked River.

The gage at Lake Billy Chinook marks the lower termini of the Middle Deschutes WSR, with the upper termini located at Odin Falls. Conditions and operating mode at the date the rivers were added to the WSR System (October 1988) will be the basis for evaluating the project proposal in the FJAA.

The initial question to be addressed is whether the project proposal invades the designated river. The term invade is defined as encroachment or intrusion upon.

The next question to be answered, relative to the standard in Section 7(a), is whether the project proposal will "unreasonably diminish" any of the specified values. Given that the standard implies some diminution of values may be acceptable, there are two questions to consider:

1. Does the proposed project cause diminution of the scenic, recreational, fish or wildlife values of the designated river as present at the date of designation?
2. If there is diminution, is it unreasonable? This would suggest an evaluation of the magnitude of the loss. Factors to be considered include: (1) Whether the value contributed to the designation of the river (i.e., outstandingly remarkable); and, (2) the current condition and trends of the resource. (If diminution is determined to be unreasonable, measures may be recommended to reduce adverse effects to within acceptable levels.)

RATIONALE FOR DETERMINATION

The basis for this preliminary Section 7(a) determination is the project as proposed in the Settlement Agreement and Proposed License Articles (July 13, 2004) prepared by Portland General Electric and Confederated Tribes of the Warm Springs Reservation of Oregon.

The Bureau of Land Management, as principal land management agency in the project area, has utilized staff knowledge and considerable additional available data. Forest Service has been a participant with various interdisciplinary teams and a cooperator in review of this information. The accompanying Section 7(a) Report summarizes the results of this review and evaluation.

DETERMINATION

The licensee does not propose construction of any project works in the WSR corridor. In addition, there are no plans to raise the height of any dams or other project facilities that might back slack water into either Wild and Scenic River corridor. Thus, the free flowing character of the river will be maintained and as a result we have determined that the project proposal will not invade the area.

As to whether the project proposal will cause diminution of the values stated in Section 7(a), a single determination has been provided for scenery, recreation and wildlife, given their similarity. A separate determination has been made for the fisheries resource.

Scenery, Recreation, Wildlife:

The project proposes to conduct habitat enhancements for fish habitat and gage improvement in the WSR corridor that will require special restrictions on work to protect eagle nesting, key elk areas and recreation experience. While these conditions will persist throughout the term of a new license, they existed at the date of the river's designation. With the implementation of these required work restrictions we find the negative effects from the project proposal to the Middle Deschutes and Lower Crooked River do not rise to the level of unreasonable diminishment.

Fisheries:

The project proposes to conduct habitat enhancements for fish habitat and gage improvement in the WSR corridor that will increase habitat quality over the short term for chinook salmon, bull trout and redband trout. With the reintroduction of anadromous fish to these watersheds, marine derived nutrients will be restored to the Middle Deschutes and Lower Crooked River, increasing productivity for smolts and resident fish. There is some risk of increased diseases transferred upstream of the project through the reintroduction process. However, to minimize these risks, a fish disease risk assessment and transfer prevention program will be part of the proposed fish passage program. The Project and other mitigation components of the project proposal will continue to affect migration, quality and quantity of habitat, and nutrient cycling. While these conditions will persist throughout the term of a new license, they existed at the date of the river's designation. We, therefore, find the negative effects from the project proposal to the Middle Deschutes and Lower Crooked River do not rise to the level of unreasonable diminishment.

Section 7(a) Report

SCENERY

Background:

The Middle Deschutes and Lower Crooked WSR Management Plan reviews the values of the scenic resources of the two river canyons. The scenic quality of the plateaus surrounding these river canyons greatly depends on the diversity of landscape, scenic vistas and screening of human modifications. Scenic values are primarily within the foreground landscape as viewed

from the river, trails, roads and other viewpoints within the corridors. Some of these attractions include: waterfalls and springs, lush green riparian vegetation, volcanic layers of multi-colored basalt towering hundreds of feet above the canyon floors, and a diversity of wildlife.

The reflective nature and variety of water motion meandering through narrow riparian areas add significantly to canyon scenery. On the Middle Deschutes River, Odin, Big and Steelhead Falls offer change in river character enhancing the scenic quality of the corridor.

A narrow band of riparian vegetation enhances the corridor by adding a variety of lush green colors and contrast with adjacent rivers and upland desert vegetation. These colors are enhanced in the spring and fall months as new growth eventually changes to different mosaics of red and yellow.

Scenic views are generally excellent due to a variety of rock formations, depth of both river canyons and their meandering nature. Homes and utility corridors are present along the canyon rim but generally do not detract from the natural scenic quality of the area. An intercanyon basalt flow is a unique geologic feature that can be easily seen from within both river canyons.

Resource Evaluation:

The current operation does not raise the water of Lake Billy Chinook into the Wild and Scenic Corridor. The proposed operation will not alter reservoir levels from existing situation or from the time of designation.

The kokanee population of Lake Billy Chinook spawns in the Middle Deschutes and Lower Crooked River and contributes nutrients to the river as the post spawning adults die. This influx of nutrients could increase the attached algae in the river but it does not impact water clarity. Increased fish passage through project will increase the biomass of dying salmon in the Middle Deschutes River, but to a small degree. Kokanee spawners now contribute 10 times the biomass to the river each year than would a potential run of spring chinook and steelhead. Selective water withdrawal may change the productivity of reservoir and the kokanee population, but the effects are difficult to predict.

Habitat enhancements associated with the project may occur in the Middle Deschutes and Lower Crooked WSR. These projects would primarily focus on improving water quality and water quantity in the WSR and would generally improve the Scenic quality. Other improvements to habitat may entail erosion control along trails and roads. Fish passage at other smaller dams within the WSR corridor or on the boundary of the corridors may be improved through some of the mitigation funds included as part of the Settlement. The projects could be made to not detract from the natural appearance of the corridor. In addition, these projects will be associated with structures that were in existence at the time of designation.

Stream gage improvements will be located near the downstream boundary of the corridor of the Middle Deschutes River. No long-term changes to water quality or scenic quality are expected from this proposal and any structures would be made to blend into the surrounding landscape, where there are already structures.

RECREATION

Background:

A diversity of year-round roaded natural, semi-primitive motorized and semi-primitive non-motorized recreation opportunities are available throughout the river corridors. These include but are not limited to fishing, hiking, camping, wildlife and nature observation, expert kayaking and rafting, picnicking, swimming, sunbathing, hunting and photography.

A survey was conducted at Steelhead Falls in 1991 to determine recreation opportunities and their value level in the deeper canyon areas. About 30% of visitors that frequent the area originate in the Willamette Valley and Portland Metropolitan Area, 12% were from Crooked River Ranch, and 48% were from other Central Oregon Communities. About 79% of those surveyed visited the area to fish, 73 % enjoyed sightseeing, 58 % engaged in wildlife observation, 33% enjoyed camping, 27 % enjoyed picnicking and 3 % enjoyed rafting and photography.

Some portions of both river canyons are runnable by expert kayakers during high water flows. The segment from New York Rapids to Opal Springs is extremely rocky and very difficult (Class IV and V). Both canyons attract regional and national use by experts looking for wild recreational experience and challenging water during normal spring runoff periods. Those with advanced skills have been known to raft portions of these rivers with several portages during spring.

Outstanding fishing opportunities exist at different times during the year with 4000 visitor days of fishing annually. Access points can be heavily used at times because they are limited.

Undeveloped trails offer hiking, biking or horse use within the corridor and surrounding area. On the Middle Deschutes River, these include the trail to Steelhead Falls, Scout Camp, Geneva Point, and the CCC trail. On the Lower Crooked, these trails include Hollywood Road trail across private land.

The area surrounding Steelhead Falls and the lower segment 4 of the Middle Deschutes River is located within the Steelhead Falls Wilderness Study Area. This area has been managed to retain its wilderness values since its designation.

Resource Evaluation:

The primary forms of recreation are hiking, sightseeing and fishing. These values will not be negatively impacted by the proposed fish passage and reintroduction of anadromous fish and may enhance their value. Water quality will be maintained upstream of the project reservoirs. Additional opportunities to view salmon spawning in the pools and at falls and chutes may enhance the recreational value of the river corridor.

Habitat enhancements proposed in the watershed will fit into the existing natural character of the river and at the time of designation. Erosion control projects will improve trails and roads and fish passage projects will increase the recreation opportunities in the corridors.

Added facilities for stream gage improvements will fit in with the existing setting at the gage location. The new facilities will not significantly change the use or how people value the river corridor in that reach.

FISH

Background:

Redband Trout, state and federal listed sensitive species, of the Middle Deschutes/ Lower Crooked Rivers are thought to have some influence from cross breeding with hatchery rainbow trout. Although stocking hatchery trout was discontinued in the 1970s, today the population is managed as a wild trout fishery. According to a BLM survey, fish range up to 15 inches long and average 6 to 12 inches. There is little spawning habitat in the WSR reach.

Bull trout, listed as threatened under the Endangered Species Act, have been increasing in the Metolius/Lake Billy Chinook complex since the mid 1980s as a result of restricted angling regulation starting in 1988. The population spawns in the Metolius watershed but rears as subadults and adults in the Middle Deschutes downstream of Steelhead Falls and in the Crooked River downstream of Opal Springs Dam. The population is listed in the State of Oregon as healthy and recovering. Requiring cold water to spawn and successfully rear as fry, these fish have adequate habitat to recover from over harvest in the Metolius watershed due to the high quality, spring-fed streams. Most of the springs that rise in the Middle Deschutes/Lower Crooked WSR are slightly warm (51 to 53 °F) for adequate spawning habitat for bull trout. No bull trout spawning or fry have been documented in these river segments.

Chinook, steelhead and lamprey migrations have been blocked by Pelton Round Butte Dam since the late 1960s and no longer are found in the Middle Deschutes and Lower Crooked River. Spring chinook and to a lesser degree summer/fall chinook were historically numerous in the Middle Deschutes and Crooked River prior to development of floodplains, water withdrawal for irrigation and blockages by Pelton Round Butte Dams and Opal Springs Dam. High quality rearing habitat exists in the WSR segments for chinook salmon and steelhead trout.

Other native species of fish include mountain whitefish, coarsescale sucker, finescale sucker, bridgelip sucker, northern pike-minnow, tui chub, dace, sculpin, chiselmouth. Whitefish is an abundant fish in the Middle Deschutes River. These fish are frequently caught by anglers. Fresh water mussels and many species of aquatic insects are known to inhabit the corridors.

Smallmouth bass, brown trout, and stickleback have been introduced to the system, although brown trout are much more abundant. Kokanee have adapted to Lake Billy Chinook and now spawn in the Middle Deschutes up to Steelhead Falls, Squaw Creek up to Alder Springs and in the Lower Crooked River up to Opal Springs Dam.

Habitat in both river segments is dominated by incremental gains in spring-fed water moving downstream to Lake Billy Chinook. This provides a diversity of water temperatures for the various seasons. Springs also mitigate the impact of flow fluctuations and upstream irrigation withdrawals to some degree. As inflow from springs increases, the river forms deep pools with sharp drops and rapids that are created by boulders that have fallen from the canyon walls. These large boulders create large deep pools, complex side channels, pocket pools and cover habitats that offer good quality habitat for redband trout, bull trout, chinook and steelhead. Pool habitat is particularly important to chinook and bull trout. Pocketwater and the seams where the rapids meet the pools are good habitat for redband and steelhead trout. Spawning habitat is estimated to be less than 15 percent of the habitat area, and is limited by the capture of gravel from upstream impoundments.

Riparian vegetation is in excellent condition and includes a rare example of white alder/dogwood communities without major disturbances. This diverse community serves to shade the river to prevent solar heating of the spring waters and also provides additional cover for fish.

Both river segments are impacted by fish migration barriers. The middle Deschutes River is bounded by natural water falls in the upstream reach by Odin, Big and Steelhead Falls. The Lower Crooked River has limited upstream passage for fish moving upstream past the Opal Springs Dam.

Evaluation Criteria:

Pool Habitats, Spawning Habitat, Water Quality, Migration Barrier below the WSR, Anadromous Fish Habitat, Bull Trout Habitat, Refuge Habitat, and Nutrient Cycling

Resource Evaluation:

Overall Effects – Overall effects on fish habitat would be beneficial if habitat enhancements and anadromous fish reintroduction were implemented in the Middle Deschutes and Lower Crooked River. Renewed fish passage would reconnect the anadromous fish populations into the upper Deschutes River and Crooked River and increase connectivity of lower Deschutes Basin bull trout populations. Nutrient loading will be increased from natural cycles of anadromous fish runs bringing nutrients derived from the ocean. Facilities from new gages will not impact habitat adversely or in the long-term.

Pool Habitats– Pool habitat in the Middle Deschutes and Lower Crooked River is primarily formed by boulders and lateral scour. Habitat enhancements scheduled as part of the Settlement could include increased summer instream flow, riparian protection, erosion control and fish passage. Additional flow from habitat enhancements will increase the quality of pools in the upper portions of the corridors where springs have less influence.

Spawning Habitat – Habitat enhancement projects in the upper watershed may increase habitat quality for spawning trout and salmon by reducing fine sediment loading, primarily in the Crooked River. Improving spawning gravel quality will improve spawning habitat for chinook salmon, steelhead trout and redband trout.

Bull Trout Habitat – Bull trout habitat will be increased through the proposed fish habitat enhancements. Fish passage will improve the effective range of bull trout and may increase the use of the Middle Deschutes and Lower Crooked by bull trout. Increased summer flow as part of habitat enhancements may improve water quality in the upper reaches of the WSR corridors and increase bull trout distribution.

Migration Barrier below the WSR – Pelton Round Butte Dam is a barrier to fish. The Settlement Agreement and proposed License Articles propose to renew fish passage for chinook, sockeye, steelhead, lamprey, bull trout and redband trout. This will allow access of bull trout from the Middle Deschutes and Lower Crooked to the Lower Deschutes River, a goal in the recovery plan for this Threatened species. Through the selective withdrawal at the intake of Round Butte Dam, fish passage may increase connectivity of redband trout populations associated with the Middle Deschutes and Lower Crooked River. Re-establishment of fish passage would allow a population of chinook salmon and sockeye salmon in the WSR corridors.

Anadromous Fish Habitat – Through fish passage and fish habitat enhancements, chinook and sockeye habitat will be improved and expanded. Chinook are closely linked to pool-like habitat that is provided by boulder drop habitat in the Middle Deschutes River and Lower Crooked River.

Nutrient Cycling -- Recently, scientists have described the role that salmon carcasses play in nutrient cycling and their influence on ecological functioning in aquatic, riparian, and even upland ecosystems (Bilby et al., 1996; Larkin and Slaney, 1997). Factors influencing these processes include abundance, retention, and distribution. Due to both the loss of habitat (resultant from blockage) Pelton Round Butte Dams have affected the abundance, retention, and distribution of carcasses in the Middle Deschutes and Lower Crooked WSR. The proposed fish passage plan will serve to reestablish this link with ocean nutrients, although without significant increases in habitat quality, these anadromous fish runs, and resulting nutrient loading, may be at low levels.

WILDLIFE

Background:

Both rivers contain a wide variety of wildlife generally in the big sage/grass and riparian habitat types. Waterfowl use the river corridors for nesting and brood rearing. Resident and migratory waterfowl occupy the rivers open water until winter. The high vertical cliff faces next to the river surrounded by open grassland with an abundance of small rodents offers prime habitat for bald eagle, golden eagle, osprey, prairie falcon, ravens, owls, and possibly peregrine falcon. Bald Eagles are listed as Threatened under ESA and are known to winter along the Middle Deschutes downstream of Lower Bridge and within the Lower Crooked River segment. There

are a variety of other species that use the talus and cliff habitats. Caves are also unique habitats found in the WSR corridors that offer habitat for deer, mice, bushy-tailed woodrats, bobcats, coyotes, porcupines, bats and other small mammals. Wintering populations of elk and deer are found in the corridors. The canyons are an important part of the Metolius deer winter range. A small population of wintering antelope also occupies the western portion of the lower Crooked River corridor. Other residents include quail, chukar, blue herons, kingfishers, otters, mink, raccoon and beaver.

Resource Evaluation:

Riparian habitats are recognized for being valuable and highly productive wildlife habitats. However, a review of species that inhabit the Middle Deschutes and Lower Crooked WSR and their habitat requirements indicates that no species is so restricted to any one component of the riparian vegetation that its numbers would be reduced below viable population levels by the project proposal or the mitigations. Habitat enhancements for fish habitat or gage modifications within the WRS corridor, if done within appropriate timing windows, will not impact bald eagle nesting, golden eagle, peregrine falcon, osprey nesting or winter deer, elk or antelope habitats. The reservoirs immediately downstream of the Middle Deschutes/Lower Crooked WSR causes higher pH and lower dissolved oxygen than fish and wildlife species experienced prior to construction of the project. These conditions will not change significantly compared to the time of the designation of the WSR.

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Metolius River Wild and Scenic River

Introduction

The Pelton Round Butte Hydroelectric Project is located on the east side of the central Cascade Mountain Range in Jefferson County, Oregon, approximately 15 miles west of the city of Madras, Oregon. The project consists of a series of three dams on the Deschutes River that impound portions of the canyons of the Deschutes, Metolius and Crooked Rivers. These three dams include Round Butte Dam (the upstream most), Pelton Dam and the Reregulating Dam.

With the passage of the Omnibus Oregon Wild and Scenic Rivers Act of 1988, Congress designated the Metolius River from the headwaters to Bridge 99 as a Recreational River (segment 1) and downstream of bridge 99 to Lake Billy Chinook as a Scenic River (segment 2). Upon designation, the 28.7 mile segment of the Metolius River was identified having outstandingly remarkable geology, hydrology, vegetation and ecology, water, scenery, wildlife, recreation, fisheries and cultural resource values. The USDA Forest Service (Deschutes National Forest), and Oregon State Parks and Recreation Department are responsible for the administration of the Metolius Wild and Scenic River (WSR) and for protecting its free-flowing condition, water quality and outstandingly remarkable values. In addition to its status as a Wild and Scenic River, the segment from the headwaters downstream to Candle Creek was designated as an Oregon State Scenic Waterway in 1988.

The accompanying report analyzes the effects of the Pelton Round Butte Hydroelectric Project as it is proposed to operate under the License Conditions recommended in the Settlement Agreement (July 13, 2004)e for Pelton Round Butte Hydroelectric Project #2030. Specifically, the analysis considers whether the project proposal will invade the area or unreasonably diminish the scenic, recreational, fish or wildlife values present at the date of the Metolius WSR designation.

BACKGROUND

Metolius WSR:

The outstandingly remarkable values of the Metolius WSR as described in the Metolius WSR Final Environmental Impact Statement (1996), Appendix C are shown below:

Hydrology/Water Quality – The Metolius has extremely high water quality over the full length of river. The Metolius is the largest spring-fed river in the region, has the steepest gradient drop and has a unique downstream temperature decline. The constant stable flow regime is unique to the size of river and contributes greatly to the stability of the Lower Deschutes River downstream of the project.

Geology- The Green Ridge fault is evidence of a large graben in the High Cascades and causes a large number of springs to develop. The Metolius is used as an example of the

interplay of faulting, volcanism, and groundwater hydrology in many college-level geology classes, field guides and geologic literature.

Vegetation and ecology-The presence of unique plants, vegetation associations and habitats include: landscape gradients as the river flows from forested Cascades to sage brush steppe, disjunct population of west side Cascades species on Green Ridge, epicenter of a rare endemic wildflower, Pecks Penstemon, presence of historic rare species of Tall Agoseris and Water Lobelia, and vegetated river islands.

Wildlife- The quality and diversity of habitats along the river corridor offers habitat for federally listed northern spotted owl and bald eagle, winter range for mule deer and elk and contiguous habitat for a variety of other species.

Scenery – The extent and context of the foreground landscape within a ponderosa pine forest provides a diversity of views, with rustic character of existing buildings blending with elements found in the natural landscape. The corridor offers a diversity of views over a relatively short length of river but throughout its length.

Recreation – Visitors who come are able to participate in a rich mix of dispersed and developed recreation in the upper river combined with the change in character to a dispersed primitive setting on the lower portion of the river. Uses include rafting, kayaking, whitewater canoeing, biking, hiking, wildflower walks, sightseeing, fishing, camping, and hunting.

Fisheries – The spring fed cold water with stable flows makes the Metolius highly productive. The historic run of chinook and sockeye salmon, strong bull trout population and popular redband trout and brown trout fishery make the river a diverse fish habitat. Flyfishing on the Metolius River is very popular and known throughout the state and nation.

Cultural Resources – Both prehistoric and historic values are outstanding along the Metolius River. Sites with evidence of occupation and use predate Mt Mazama and give evidence of more than one cultural group. Traditional uses have been established through time immemorial and recognized through Treaty and Tribal code. Historic themes of early exploration by trappers, engineers, homesteading, early recreation use, CCC use and early Forest Service management are unique in the region.

Existing Project Description:

The Pelton Round Butte Hydroelectric Project (FERC #2030) is located on the Deschutes River, approximately 8 miles west of the city of Madras, Oregon. Pelton Round Butte consists of a three-dam complex with associated powerhouses.

Round Butte Dam is a 440-foot high rock fill dam that impounds Lake Billy Chinook, a 4,000 surface acre reservoir. The powerhouse at Round Butte Dam has a capacity of 300 MW. Pelton Dam is a 204-foot high, concrete radial arch structure, and impounds Lake Simtustus, a 540 surface acre reservoir. The Pelton powerhouse has a generation capacity of 108 MW. The

lowest of the three dams is the Pelton Reregulating Dam, an 88 foot high concrete and rock filled structure with a powerhouse capacity of 19 MW. The Reregulating Dam impounds the 190 surface acre Reregulating Reservoir. The three dams and powerhouses are jointly owned and operated by PGE and the Confederated Tribes of Warm Springs. The two upper dams are managed as peaking facilities with the lower dam managed as a reregulating facility and operated to provide both energy production and reregulate flows in the lower Deschutes River. Additional project structures include fish facilities such as the Pelton Fish Ladder, currently used for rearing spring chinook, retired fish passage facilities at the Round Butte and Pelton dams, Round Butte Hatchery at the base of Round Butte Dam, and the Bethel-Round Butte transmission line which extends 100 miles from the project over the Cascade Mountains to PGE's substation near Salem.

The three-dam complex, powerhouses, and operation of project facilities significantly affect fish resources of the Deschutes River basin. Wild fish populations which presently inhabit the Deschutes River and tributaries in the lower basin below the project include spring and fall chinook salmon, summer steelhead and native redband trout, bull trout, Pacific lamprey and mountain whitefish. Resident salmonids above the project include redband trout, bull trout, brown trout, and kokanee.

The project is run in a modified run of the river mode, with Round Butte Dam and Pelton Dam operations managed for peak generation and the Reregulating Dam managed to release steady flow to the river downstream. Outflow from the Reregulating Dam is managed to mimic inflow to the project in general. Minimum flows are set at 3000 cfs in the summer and winter and at 3500 cfs in the springtime. Ramping rates are not specified in the existing license but are the result of an agreement between PGE and recreational anglers and guide/outfitters. Under this agreement, ramping rates are not to exceed 0.1 ft/hr and 0.4ft/day in the winter and 0.1 ft/hr and 0.2 ft/day in the summer. The reservoir level of Lake Billy Chinook (LBC) is limited to within one foot of full pool from June 16th to September 15th. Winter reservoir levels are limited to an 80ft drawdown, but are commonly only 20ft or less. Fish passage at the project was attempted when the projects were built but was abandoned when downstream passage for juvenile smolts through LBC was shown to be unsuccessful in the late 1960's. A hatchery was built at the base of Round Butte Dam to mitigate the loss of fish passage at the complex. Cooperative fish habitat projects were completed jointly with Portland General Electric, ODFW and USFS in the Metolius River and its tributaries in the 1980s and 1990s. Wood from the Metolius River was collected after the 1996 flood and some of that wood was secured to the shoreline of Lake Billy Chinook. Some small riparian planting projects were attempted along Lake Billy Chinook with limited success. In the past few years temporary downstream fish screw traps have been run in the rivers flowing into Lake Billy Chinook to monitor movements of fish into the reservoir.

Proposed Project Operations:

The Settlement Agreement and Proposed License Conditions (July 13, 2004) for the project propose that the project be operated as a modified run of the river, with Round Butte Dam and Pelton Dam operations managed for peak generation and the Reregulating Dam managed to release a steady outflow that is regulated to be +/- 10% of the average daily inflow. Monthly average target flows are based on the State Instream Flow Water Right Certificate unless inflow is less than target. In this case, inflow becomes the target flow. There are allowances for

dropping outflow 150cfs below inflow to refill Lake Billy Chinook and maintain the summer operating level within the top foot between May 15 and September 15. In low flow conditions, up to four feet of storage may be used to maintain flows at or above 3000 cfs between May 15 and September 15 to protect spawning chinook. Ramping rates will be more restrictive in the new license, with summer rates proposed at 0.05 ft/hr and 0.2 ft/day and winter rates set at 0.1 ft/hr and 0.4 ft/day. Winter drawdown will not exceed 20 ft.

Fish passage is proposed in the new license, with a selective withdrawal tower built to create surface flow attraction for smolt collection at Round Butte Dam. Temporary traps at the tributary river mouths will be used to monitor smolt migration into the reservoir in the short term or initial phase of fish passage. Wood from the reservoir would be collected and transferred to the Lower Deschutes River for fish habitat. A program of habitat enhancements is scheduled to be implemented on Trout creek and the Metolius, Middle Deschutes and Lower Crooked Rivers and their tributaries. Stream gages near the mouths of the Metolius River, Middle Deschutes and Lower Crooked River will be updated to have real time links to provide improved inflow monitoring for flow matching for outflow operations. Gravel augmentation in the reach between the Reregulating Dam and Shitike Creek will begin on an experimental basis in the new license.

SECTION 7 REQUIREMENTS

Section 7(a) of the WSRs Act provides a specific standard for review of developments below or above a designated river.

Developments below or above a designated river may occur as long as the project "will not invade the area or unreasonably diminish the scenic, recreational, and fish and wildlife values present in the area as of the date of designation.

This standard applies to projects located outside the designated river corridor itself but on the same river or tributary, as is the case with the Metolius River.

Lake Billy Chinook marks the lower termini of the Metolius WSR. The upper terminus is located at the Deschutes National Forest Boundary near the headwaters. Conditions and operating mode at the date the river was added to the WSR System (October 1988) will be the basis for evaluating the project proposal.

The initial question to be addressed is whether the project proposal invades the designated river. The term invade is defined as encroachment or intrusion upon.

The next question to be answered, relative to the standard in Section 7(a), is whether the project proposal will "unreasonably diminish" any of the specified values. Given that the standard implies some diminution of values may be acceptable, there are two questions to consider:

1. Does the proposed project (Final Joint Application Amendment) cause diminution of the scenic, recreational, fish or wildlife values of the designated river as present at the date of designation?

2. If there is diminution, is it unreasonable? This would suggest an evaluation of the magnitude of the loss. Factors to be considered include: (1) Whether the value contributed to the designation of the river (i.e., outstandingly remarkable); and, (2) the current condition and trends of the resource. (If diminution is determined to be unreasonable, measures may be recommended to reduce adverse effects to within acceptable levels.)

RATIONALE FOR DETERMINATION

The basis for this preliminary Section 7(a) determination is the project as proposed in the Settlement Agreement and Proposed License Articles (July 13, 2004) prepared by Portland General Electric and Confederated Tribes of the Warm Springs Reservation of Oregon.

The Forest Service, as principal land management agency in the project area, has utilized staff knowledge and considerable additional available data in the analysis. BLM has been a participant on various interdisciplinary teams and a cooperator in review of this information. The accompanying Section 7(a) Report summarizes the results of this review and evaluation.

DETERMINATION

The licensee does not propose construction of any project works in the WSR corridor. In addition, there are no plans to raise the height of the dams or other project facilities that might back slack water in the WSR corridor. Thus, the free flowing character of the river will be maintained. As a result, we have determined that the project proposal will not invade the area.

As to whether the project proposal will cause diminution of the values stated in Section 7(a), a single determination has been provided for scenery, recreation and wildlife, given their similarity. A separate determination has been made for the fisheries resource.

Scenery, Recreation, Wildlife:

The project proposes to conduct habitat enhancements for fish habitat and gage improvements in the WSR corridor that will require special restrictions on work to protect eagle nesting, key elk areas and recreational experience. While these conditions will persist throughout the term of a new license, they existed at the date of the river's designation. We, therefore, find the negative effects from the project to the Metolius WSR do not rise to the level of unreasonable diminishment.

Fisheries:

The project proposes to conduct habitat enhancements for fish habitat and gage improvements in the WSR corridor that will increase habitat quality over the short term for chinook salmon, bull trout and redband trout. Marine derived nutrients will be restored to the Metolius River, increasing productivity for smolts and resident fish. There will be a risk of increased mortality from fish diseases transferred upstream of the project but this risk will be managed as part of the

Fish Passage Plan. The project and other mitigation components will continue to affect fish migration, quality and quantity of habitat and nutrient cycling. While these conditions will persist throughout the term of a new license, they existed at the date of the river's designation. We, therefore, find the negative effects from the project proposal to the Metolius WSR do not rise to the level of unreasonable diminishment.

Section 7(a) Report

SCENERY

Background:

The Metolius WSR Management Plan Environmental Impact Statement (EIS, October 1996) states:

The clear rushing water, cool breezes, and shade from yellow-barked ponderosa pines offer visitors reprieve from hot, dry summers of eastern Oregon. The Metolius is one of the most visually sensitive rivers within the region. The river area is primarily “natural appearing”, with enclaves of “cultural” landscapes (i.e., summer homes, recreation facilities, and the Camp Sherman area). The rustic, historic, “cultural” landscape character of these settings relate well with the “natural appearing” landscape character.

The Metolius River Flows out of the northern base of Black Butte and the eastern flank of the Cascade Mountains. The spring-fed river exhibits outstanding scenic qualities due to the unique natural processes and resources that form the landscape and the high value place on the river and its environment. The Metolius River corridor is surrounded by the diversity of dramatic and unique landforms, including gentle sloping lava fields, steep ridges and bluffs, and distant jagged mountain tops. These landforms represent thousands of years of geologic processes entailing fault-block, volcanic eruptions and glacial and water erosion.

Most of the water in the Metolius comes from springs. Snowmelt from the high Cascades infiltrates the soil and lava fields until it runs into the fault along the impervious graben of Green Ridge. Water clarity and quality is outstanding, lacking the usual turbidity even during normal storm events.

Vegetation along the corridor provides a diversity of habitats for wildlife and contributes to the contiguous habitat conditions along the river. Riparian plant communities, ponderosa pine forests in the upper river and mixed conifer in the lower reaches offer opportunities to view a diversity of wildlife including bald eagle, spotted owl, mule deer, elk, river otter, bobcats, beaver and others.

Cultural landscape character in the upper segment is natural appearing, with enclaves of cultural settings of buildings, homes, ranches and recreational facilities that blend with the surroundings. The Metolius River corridor is held in high reverence by many people.

Views of the upper Metolius River is primarily foreground landscapes, although a few opportunities exist for expansive, distant views, dominated by strips of riparian vegetation and flat open stands of ponderosa pine forests interspersed with limited recreational and residential developments. The Gorge area is dominated by views of the river with fast water and rock walls. The lower river is dominated by a large deep canyon, lush riparian vegetation, and steep canyon slopes. More distant views are possible from the river corridor of Mt. Jefferson, Green Ridge, Black Butte, and the Cascade Range. The view of Mt. Jefferson from the headwaters is one of the most photographed sites in the state of Oregon.

Resource Evaluation:

The current operation does not raise the water of Lake Billy Chinook into the Wild and Scenic Corridor. The proposed operation will not alter reservoir levels from the existing situation or the time of designation.

The kokanee population of Lake Billy Chinook spawns in the Metolius River and contributes nutrients to the river as the post spawning adults die. This influx of nutrients could increase the attached algae in the river but it does not impact water clarity. Increased fish passage through the project will increase the biomass of dying salmon in the Metolius River, but to a small degree. Kokanee spawners now contribute 10 times the biomass to the river each year than would a potential run of spring chinook. Selective water withdrawal may change the productivity of reservoir and the kokanee population, but the effects are difficult to predict.

Habitat enhancements associated with the settlement may occur in the Metolius WSR. These projects are currently being conducted under the existing WSR Plan and are consistent with Scenic quality objectives. Accumulations of down trees in the river are part of the natural processes and function of the river. These processes are important to the creation of river islands and the diverse riparian plant communities associated with them.

Stream gage improvements will be located near the downstream boundary of the corridor. No long-term changes to water quality are expected from this proposal and any structures would be made to blend into the surrounding landscape in the campground, where there are already structures.

RECREATION

Background:

The Metolius WSR Management Plan EIS (October 1996) states:

The rivers' clean, cold water and abundant fishery attract many anglers, and the river has a fine reputation among fly anglers who fish for rainbow trout, bull trout and other species. Many visitors come to catch a glimpse of the corridors wildlife, including elk, deer, bear, smaller mammals and birds. The river provides a unique, year-round opportunity for rafting, kayaking and whitewater canoeing well suited for day trips. The big ponderosa pines, remarkable wildflower displays and rustic character provide great viewing along

trails. Hikers and bikers along the Scenic river segment may not see another person for much of their trek.

Principal recreation activities within the river corridor include driving-for-pleasure, fishing, camping, hiking, biking, hunting and whitewater boating. Sightseeing is popular, with nearly 130,000 visitors visiting the Head of the Metolius viewing area each year. Camping is very popular along the Metolius River, with 12 developed campgrounds. The majority of camping is with recreational vehicles and has been estimated to be over 65,000 campers per year.

The Metolius River has been described as the premier flyfishing river in Central Oregon. Native redband trout are increasingly abundant in the upper River in the Camp Sherman area. Anglers also pursue bull trout on the fly, one of the only areas in Oregon that bull trout can be fished catch and release. Brown trout are also caught, especially in the Camp Sherman area. Anglers surveyed in the 1990 Forest Service survey averaged 4 hrs of fishing per day and the remainder of the day was spent in other recreational activities in the corridor.

Boating is available all year on the Metolius River. Most whitewater kayaking and rafting is done in the summer months on the lower Scenic segment of the WSR. Day trips for kayakers also are found in the canyon reach between Canyon Creek and Wizard Falls Fish Hatchery and in the Gorge. The Camp Sherman reach is mostly floated with small boats. Hazards to boaters are part of the experience of the Metolius River. The cold water can reduce the swimming ability of boaters and fallen trees and trap the unsuspecting boater. Signs at popular launch sites warn boaters new to the river of the hazards of instream wood.

Hiking along public lands is available throughout the river corridor. Trails frequented both by hikers and anglers parallel much of the river and loop trails are possible in the Camp Sherman area and between Wizard Falls and Bridge 99. Primitive trails are located downstream of Bridge 99 both along the river and on top of Green Ridge. Mountain biking is becoming popular both on forest roads and trails in the river corridor.

Resource Evaluation:

The primary forms of recreation is hiking, sightseeing and fishing. These values will not be negatively impacted by the proposed fish passage and reintroduction of anadromous fish. Water quality will be maintained upstream of the project reservoirs. Additional opportunities to view salmon spawning in the Camp Sherman reach may enhance the recreational value of the river corridor.

Habitat enhancements proposed in the watershed will fit into the existing natural character of the river and at the time of designation. Wood enhancements for fish habitat will need to be managed for safe boating under the management directions of the Wild and Scenic Plan.

Added facilities for stream gage improvements will fit in with the developed recreation setting at the gage location. The new facilities will not change the use or how people value the river corridor in that reach.

FISH

Background:

Native species of fish include redband trout, bull trout, chinook salmon, sockeye salmon, pacific lamprey, mountain whitefish, largescale sucker and bridgelip sucker, long nose dace and three species of sculpin. Chinook, sockeye and lamprey migrations have been blocked by Pelton Round Butte Dam and no longer are found in the Metolius River. Brown trout and brook trout have been introduced to the system. Kokanee have adapted to Lake Billy Chinook and now spawn in the Metolius River and its tributaries.

Redband trout, an Oregon and Federal Sensitive species, were at a low population level in the mid 1990s but have recovered greatly to five times the spawning population in recent years. Hatchery rainbow trout were discontinued in 1995, about the time the river was recovering from a long-term drought. Also, instream wood has increased in the Metolius River from habitat projects and natural infall. This wood is important in forming pool habitat and cover in a normally shallow, wide channel. With the stable flows of the Metolius Springs, wood remains in the river and is rapidly covered in riparian vegetation, adding to the habitat value.

Bull trout populations, listed as Threatened under the Endangered Species Act, have been increasing in the Metolius since the mid 1980s as a result of restricted angling regulation starting in 1988. The population is listed in Oregon as healthy and recovering. Requiring cold water to spawn and successfully rear as fry, these fish have adequate habitat to recover from over harvest in the Metolius watershed due to the high quality, spring-fed streams.

Whitefish is the most abundant fish in the Metolius River, far outnumbering redband trout in both numbers and biomass. These fish are frequently caught by anglers.

Anadromous fish have been blocked by Pelton Round Butte Dams since the late 1960s. Spring chinook were historically numerous in the upper Metolius River. It is reported that the name Metolius is adapted from a Native American word meaning salmon or chinook. Reports of lamprey and steelhead are scarce from the Metolius River. Sockeye salmon originally were found in Suttle Lake and migrated through the Metolius River and Lake Creek. Thought to be extinct since 1940, hatchery sockeye were managed into the early 1950s in the watershed, with somewhat poor success. Suttle Lake is one of two lakes in which native sockeye salmon were found in Oregon.

Evaluation Criteria:

Pool Habitats, Instream Wood, Spawning Habitat, Water Quality, Migration Barrier below the WSR, Anadromous Fish Habitat, Bull Trout Habitat, Refuge Habitat, and Nutrient Cycling

Resource Evaluation:

Overall Effects – Overall effects on fish habitat would be beneficial if habitat enhancements were implemented in the Metolius River and its tributaries. Renewed fish passage would reconnect

the anadromous fish populations into the upper Metolius River and increase connectivity of lower Deschutes Basin bull trout populations. Nutrient loading will be increased from natural cycles of anadromous fish runs bringing nutrients derived from the ocean. Facilities from new gages will not impact habitat adversely or in the long-term.

Pool Habitats and Instream Wood – Pool habitat is primarily formed by wood and lateral scour in the Metolius River. In the spring fed reaches in the upper river, the broad flat channel is low in pool habitat from historic removal of wood in the past. The Settlement proposes fish habitat projects in the watershed upstream of the Project. These habitat enhancements, using wood, will increase pool habitat in the Metolius River consistent with the Metolius Watershed Analysis. The work can be done under an existing Section 7 determination for the Metolius WSR which evaluates the wood placement projects for any ‘direct and adverse’ for the effects of project within the WSR corridor.

Spawning Habitat – Sorting of gravel using wood for fish habitat enhancements will improve spawning habitat for chinook salmon, bull trout and redband trout. Pool and tailout formation from the scour around the wood will create good quality habitat while maintaining the scenic and recreational values of the WSR.

Bull Trout Habitat – Bull trout habitat will be increased through the proposed fish habitat. The water quality of the Metolius and its tributaries that bull trout depend on will be protected. Rearing habitat for bull trout in the Metolius River will be greatly improved through this action because of their use of cover and pools.

Migration Barrier below the WSR – Pelton Round Butte Dam is a barrier to fish. The Settlement proposes to renew fish passage for chinook, sockeye, steelhead, lamprey, bull trout and redband trout. This will allow access of bull trout from the Metolius River to the Lower Deschutes River, a goal in the recovery plan for the Threatened species. Through the selective water withdrawal at the intake of Round Butte Dam, fish passage may increase connectivity of redband trout populations associated with the Metolius River, the Deschutes River and the Lower Crooked River. Re-establishment of fish passage would allow a population of chinook salmon and sockeye salmon in the Metolius River.

Anadromous Fish Habitat – Through fish passage and fish habitat enhancements, chinook and sockeye habitat will be improved and expanded. Chinook are closely linked to pool-like habitat that is provided by wood in the Metolius River. There will be a risk of increased mortality from fish diseases transferred upstream of the project but this risk will be managed as part of the Fish Passage Plan.

Nutrient Cycling -- Recently, scientists have described the role that salmon carcasses play in nutrient cycling and their influence on ecological functioning in aquatic, riparian, and even upland ecosystems (Bilby et al., 1996; Larkin and Slaney, 1997). Factors influencing these processes include abundance, retention, and distribution. Due to both the loss of habitat (resultant from blockage) Pelton Round Butte Dams have affected the abundance, retention, and distribution of carcasses in the Metolius WSR. The proposed fish passage plan will serve to

reestablish this link with ocean nutrients, although without significant increases in habitat quality, these anadromous fish runs, and resulting nutrient loading, may be at low levels.

WILDLIFE

Background:

The wildlife resources found within the Metolius WSR corridor are typical of the species and habitats found within other river systems in Central Oregon. There are several wildlife species within the WSR corridor that have special management considerations under the Deschutes National Forest Land and Resource Management Plan:

- The bald eagle is federally listed as threatened. There are two active nest sites in close proximity to the Metolius WSR corridor. Habitat for the bald eagle occurs within the WSR corridor.
- The Northern spotted owl is federally listed as threatened. There is one active nest within the WSR corridor.
- The peregrine falcon is a Regional Forester's sensitive species. There have been sightings but no nests have been located within the WSR corridor.
- The osprey, although not listed or sensitive, is rare and occupies over 20 nests sites within the WSR corridor.
- Key Elk Habitat Area is managed within the Metolius WSR.

The amount of riparian and wetland habitats is limited in the forest environment but is among the most heavily used by wildlife. Riparian habitats and wetlands are characterized by high diversity and productivity of both animal and plant species. The major life requirements for many species are present in riparian areas and some animals such as aquatic species and amphibians use these areas exclusively. Riparian zones have microclimates that differ from the surrounding areas and some animals prefer them. The elongated shapes of riparian areas make them natural migration and travel corridors for species such as ruffed grouse, bats, beaver, mink, and otter. Amphibians that may occur within the Metolius WSR includes the Pacific tree frog, tailed frog, cascade frog, western toad, and rough skinned newt. Reptiles include the Pacific rattlesnake, Western skink, common garter snake, rubber boa, and Western fence lizard.

Resource Evaluation:

Riparian habitats are recognized for being valuable and highly productive wildlife habitats. However, a review of species common to the Metolius WSR corridor and their habitat requirements indicates that no species is so restricted to any one component of the riparian vegetation that its numbers would be reduced below viable population levels by the project proposal. The reservoirs immediately downstream of the Metolius WSR cause pH and lower dissolved oxygen than fish and wildlife species experienced prior to construction of the project.

Habitat enhancements for fish habitat and gage modification within the WSR corridor, if done within appropriate timing windows, will not impact bald eagle nesting, osprey nesting or key elk habitats.

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***Pelton Round Butte Project
Settlement Agreement***

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NOAA FISHERIES BEST MANAGEMENT PRACTICES

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APPENDIX F

NOAA Fisheries Best Management Practices

Pollution and Erosion Control Plan. Prepare and carry out a pollution and erosion control plan to prevent pollution caused by surveying or construction operations. The plan must be available for inspection on request by Corps or NOAA Fisheries.

1. Plan Contents. The pollution and erosion control plan will contain the pertinent elements listed below, and meet requirements of all applicable laws and regulations.
 - a. The name and address of the party(s) responsible for accomplishment of the pollution and erosion control plan.
 - b. Practices to prevent erosion and sedimentation associated with access roads, stream crossings, drilling sites, construction sites, borrow pit operations, haul roads, equipment and material storage sites, fueling operations, staging areas, and roads being decommissioned.
 - c. Practices to confine, remove, and dispose of excess concrete, cement, grout, and other mortars or bonding agents, including measures for washout facilities.
 - d. A description of any regulated or hazardous products or materials that will be used for the project, including procedures for inventory, storage, handling, and monitoring.
 - e. A spill containment and control plan with notification procedures, specific cleanup and disposal instructions for different products, quick response containment and cleanup measures that will be available on the site, proposed methods for disposal of spilled materials, and employee training for spill containment.
 - f. Practices to prevent construction debris from dropping into any stream or water body, and to remove any material that does drop with a minimum disturbance to the streambed and water quality.
2. Inspection of erosion controls. During construction, monitor instream turbidity and inspect all erosion controls daily during the rainy season and weekly during the dry season, or more often as necessary, to ensure the erosion controls are working adequately.¹
 - a. If monitoring or inspection shows that the erosion controls are ineffective, mobilize work crews immediately to make repairs, install replacements, or install additional controls as necessary.

¹ >Working adequately= means that project activities do not increase ambient stream turbidity by more than 10% above background 100 feet below the discharge, when measured relative to a control point immediately upstream of the turbidity causing activity.

- b. Remove sediment from erosion controls once it has reached 1/3 of the exposed height of the control.
3. Construction discharge water. Treat all discharge water created by construction (e.g., concrete washout, pumping for work area isolation, vehicle wash water, drilling fluids) as follows.
- a. *Water quality.* Design, build and maintain facilities to collect and treat all construction discharge water, including any contaminated water produced by drilling, using the best available technology applicable to site conditions. Provide treatment to remove debris, nutrients, sediment, petroleum hydrocarbons, metals and other pollutants likely to be present.
 - b. *Discharge velocity.* If construction discharge water is released using an outfall or diffuser port, velocities may not exceed 4 feet per second, and the maximum size of any aperture may not exceed one inch.
 - c. *Pollutants.* Do not allow pollutants including green concrete, contaminated water, silt, welding slag, sandblasting abrasive, or grout cured less than 24 hours to contact any wetland or the 2-year floodplain.
 - d. *Drilling discharge.* All drilling equipment, drill recovery and recycling pits, and any waste or spoil produced, will be completely isolated to prevent drilling fluids or other wastes from entering the stream.
 - i. All drilling fluids and waste will be completely recovered then recycled or disposed to prevent entry into flowing water.
 - ii. Drilling fluids will be recycled using a tank instead of drill recovery/recycling pits, whenever feasible.
 - iii. When drilling is completed, attempts will be made to remove the remaining drilling fluid from the sleeve (e.g., by pumping) to reduce turbidity when the sleeve is removed.