STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300

October 9, 2006

CERTIFIED MAIL 7005 2570 0000 4819 7900

Ms. Holly Harwood
PacifiCorp
825 NE Multnomah
Portland, OR 97232

Re: **Swift No. 1 Hydroelectric Project (FERC No. 2111)**
401 Certification/Order No. 3679

Dear Ms. Harwood:

We have reviewed PacifiCorp's request for certification under the Section 401 of the Federal Water Pollution Control Act (Clean Water Act) (33 U.S.C. § 1341) for the licensing of the Swift No. 1 Hydroelectric Project (FERC No. 2111) in Skamania County, Washington. On behalf of the State of Washington, the Department of Ecology (Ecology) certifies that reasonable assurance exists that the project will comply with applicable provisions of 33 U.S.C. §§ 1311, 1312, 1313, 1316, and 1317, and other appropriate requirements of State law; subject to and limited by the conditions stated by the enclosed Certification-Order.

This Certification-Order shall be deemed withdrawn if the Federal Energy Regulatory Commission (does not issue a license for the project within five (5) years of the date of this issuance of this Certification-Order. This Certification-Order may be modified or withdrawn by Ecology prior to the issuance of the license based upon new information or changes to the water quality standards or appropriate requirements of state law. If the Certification-Order is withdrawn, PacifiCorp will then be required to reapply for state certification under Section 401 of the Clean Water Act.

If you have any questions, please contact Chris Maynard at 360/407-6484. Written comments and correspondence relating to this document should be directed to Kelly Susewind, Water Quality Program, Department of Ecology, Southwest Regional Office, P.O. Box 47600, Olympia, WA 98504. The enclosed Certification-Order may be appealed by following the procedures described in the Certification-Order.

Sincerely,

Kelly Susewind, P.E., P.G.
Southwest Region Manager
Water Quality Program

KS:CM:lmc
Enclosure

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

IN THE MATTER OF GRANTING A WATER QUALITY CERTIFICATION TO: PacifiCorp in accordance with 33 U.S.C. § 1341 FWPCA § 401, RCW 90.48.120, RCW 90.48.260 and WAC 173-201A	)))))	**CERTIFICATION-ORDER NO. 3679** Licensing of the Swift No. 1 Hydro-Electric Project (FERC no. 2111), Skamania County, Washington

TO: Holly Harwood
PacifiCorp
825 NE Multnomah
Portland, OR 97232

On December 2, 2005, PacifiCorp (Licensee) filed an application with the State of Washington Department of Ecology (Ecology) requesting issuance of a certification under the provisions of Section 401 of the Federal Water Pollution Control Act (Clean Water Act) (33 U.S.C. § 1341) to be submitted with its application for a license to the Federal Energy Regulatory Commission (FERC) for the Swift No. 1 Hydroelectric Project.

1.0 Nature of Project

The Swift No. 1 Hydroelectric Project (Swift No. 1 or Project) is one of a total of four hydroelectric projects on the North Fork of the Lewis River (Lewis River). Starting upstream and going downstream, the projects are Swift No. 1, Swift No. 2, Yale, and Merwin. The Lewis River flows west from the Cascade Mountain Range and its western foothills 93 miles into the Columbia River near the town of Woodland, Washington. Two volcanic peaks, Mount Adams and Mount St. Helens lie on the northern and eastern edges of the basin, respectively. The Project is managed for power generation, with a capacity of 240 megawatts and for flood control, recreation, and fish resources.

Swift No. 1 is located at river mile 47.9 on the North Fork of the Lewis River. Swift No. 1 includes a 512-foot high, 2,100 foot long embankment structure that forms an 11.5 mile-long reservoir. At full pool, the centers of 25-foot diameter intakes to the turbines are 134.5 feet below the surface of the reservoir. Flows are directed through this intake into a surge tank and through three turbines within a concrete powerhouse at the base of the dam. All flow from these turbines enters the Swift No. 2 canal, the water conveyance system for the Swift No. 2 hydroelectric generating system. The 3-mile natural river channel below the dam is thus bypassed

2.0 Authorities

In exercising authority under Section 401 of the Clean Water Act (33 U.S.C. § 1341), RCW 90.48.120 and RCW 90.48.260, Ecology has investigated this application pursuant to the following:

1) Conformance with all applicable water quality-based, technology-based, and toxic or pretreatment effluent limitations as provided under Sections 301, 302, 303, 306, and 307 of the Clean Water Act (33 U.S.C. §§ 1311, 1312, 1313, 1316, and 1317);

2) Conformance with any and all applicable provisions of Chapter 90.48 RCW, including the provision to use all known, available and reasonable methods to prevent and control pollution of state waters as required by RCW 90.48.010; and

3) Conformance with the state water quality standards as provided for in Chapter 173-201A WAC and as authorized by 33 U.S.C. § 1313 and by Chapter 90.48 RCW, and with other appropriate requirements of state law.

3.0 Findings

Background Information about the Project

1) Swift No. 1 is managed for power generation, with a capacity 9,120 cfs and of 240 megawatts, and for flood control, recreation, and fish resources.

2) The North Fork Lewis River watershed is 93 miles long, covers 1,050 square miles, and ranges in elevation from 12,281 feet above mean sea level (msl) at the summit of Mount Adams to eight (8) feet msl at the confluence with the Columbia River (RM 87.5) near the town of Woodland, Washington. The majority of the Lewis River basin is forested, with an area of approximately 30 square miles of upper basin denuded by the eruption of Mount St. Helens in 1980.

3) The mainstem of the Lewis River is known as the North Fork Lewis River, and flows southwesterly from its source at Mount St. Helens and Mount Adams through the Swift Creek Reservoir to Swift No. 1 Dam (RM 47.9); the Swift No. 2 canal bypassing three miles of the natural river channel to Swift No 2 (RM 44); Yale Lake to Yale Dam (RM 34.2); and Lake Merwin to Merwin Dam (RM 19.5). PacifiCorp owns and operates Swift No. 1, Yale, and Merwin Dams. Cowlitz County PUD owns Swift No. 2 Dam, which is currently operated under contract by PacifiCorp.

4) Before the Swift No. 2 and Swift No. 1 Projects were built, the Lewis River flowed through this area in a three mile natural channel. At Swift No. 1 most of this water is diverted from the natural river into a three mile man-made canal designed to supply water to the turbines in the Swift No. 2 powerhouse.

5) Construction of Swift No. 1 began in 1956 and was complete by 1959.

6) Swift No. 1 Dam typically passes water through its turbines from 6:00 a.m. to 10:00 p.m. and usually does not generate at night.

7) Swift No. 1 is operated in a coordinated system with Swift No 2, Yale, and Merwin hydroelectric projects.

8) Swift Creek Reservoir water elevations are typically held within 1 foot plus or minus, at approximately 997 feet msl during the months of May to October. Natural inflow and flood control affect winter and spring elevations which range from about 970 to 991 feet msl. Minimum pool level is 878 feet msl.

9) Swift No 2 and Swift No. 1 do not have structural facilities to allow for upstream migration of fish.

10) Fish in the vicinity of the canal and the bypassed natural river reach, are char (bull trout), cutthroat trout, rainbow trout, mountain whitefish, largescale suckers, resident Chinook and coho, and other fish species. Anadromous fish are not present. Fish in the Swift Creek Reservoir include bull trout, rainbow trout, cutthroat trout, mountain whitefish, sculpin, and sucker.

11) When Swift No. 1 Dam releases water from its spillway, those flows enter the bypassed natural river channel and do not enter the Swift No. 2 canal.

12) A Settlement Agreement was signed on November 30, 2004 and filed with FERC on December 9th, 2004. This agreement represented more than three years of collaboration between 26 parties interested in the Lewis River hydroelectric projects. In this agreement, PacifiCorp and Cowlitz PUD agreed to contribute resources towards the protection, mitigation and enhancement of fish

resources, recreation, and aesthetics. Some of the requirements reflected in this Certification-Order are a direct result of the efforts and studies conducted by the parties involved. Ecology is not part to the Settlement Agreement.

Compliance with Standards

1) Existing Water Quality: Several water quality studies were performed to assess the existing water quality of the Lewis River hydropower projects. These studies analyzed the water quality characteristics of concern for each stretch of the Lewis River system. Relevant data regarding existing water quality is summarized in Table 1.

Table 1. Existing Water Quality*

Parameter	Location	Existing Water Quality
Total Dissolved Gas (TDG)	Lewis River entering Swift Creek Reservoir	<110%
	Swift No. 1 tailrace canal and upper Yale Lake	Exceeded water quality criterion during power-up and power-down Operational Improvements have resulted in TDG <110%
	Swift No. 1 bypassed natural river and upper Yale Lake	TDG levels >110% may occur during spills
Temperature	Swift No 1 forebay	Temperature profile with more pronounced stratification at ~30 feet from June through October with bottom temperatures ~5°C throughout the year and surface temperatures reaching 19°C in summer months. Little or no stratification seen in winter months.
	Swift No 1 tailrace canal	Temperatures reflect deep coldwater withdrawals from the forebay.
	Swift No 1 bypassed natural river below dam	Excursion > 18.°C.
Turbidity	Lewis River, entering Swift Creek Reservoir	Generally below 10 NTU, storm levels of >80 NTU enter the project.
	Swift No. 1 forebay	Less than 5 NTU over background, < 6 NTU
Dissolved oxygen (D/O)	Swift forebay	Greater than 8 mg/L
pH		Between 6.5 and 8.5

*Based on:
1. Preliminary Water Quality (WQ) Study, PacifiCorp Environmental Services July 1995
2. 1996-1998 WQ Study found in Final Technical Report, Aquatic Resources, Yale Hydroelectrical Project, March 1999
3. Licensee's 2001 Technical Study Status Reports for the Lewis River Hydroelectric Projects, Volume 4, April, 2002

2) Total Dissolved Gas (TDG) exceedances occured below the Swift No. 1 Dam. These exceedances were a result of turbine operations at Swift No. 1. The turbines at Swift No. 1 were designed to use air to reduce cavitation on the turbine blades as the generators are powering up and powering down during electricity demand cycles at the beginning and end of each day. Operational adjustments to reduce the time air is entrained should correct the potential for exceedances.

3) TDG exceedances could occur below the dam in the natural bypassed river reach when the dam spills water through the spillway to this reach. Flows above the 7-day 10 year flood (7Q10) are exempt from the Water Quality Standards (WAC 173 201A-060 (4)(a)). For Swift No. 1 Dam, these river flows are calculated to be 21,322 cfs. Spills above the hydraulic capacity of the dam and below the 7Q10 flood flow are expected to occur on an average of once or twice per year to control reservoir levels during periods of high rain and/or snowmelt.

4) This Certification-Order requires minimum instream flows for the bypass reach as specified in condition 4.2.

   a) The instream flows required in condition 4.2 are intended to provide adequate flow for spawning and rearing fish. These flows will be provided in 1) an approximately 200-foot-long constructed channel from the Swift No. 2 canal immediately downstream from the Swift No. 1 turbine outlets to the upstream end of the bypass reach ("Upper Release Point", RM 47.3), 2) approximately 3 miles of the mainstem Lewis River bypass, and 3) an approximately 1000-foot-long "Canal Drain" constructed channel originating at the Swift No 2 canal approximately 1.1 miles downstream from Swift No. 1 (RM 46.2)

   b) The initial 14 cfs minimum flow from the Canal Drain constructed channel will then join the 51 to 76 cfs Upper Release Point minimum flow in the bypass reach. This water combines with seepage inflow of 10 to 20 cfs in the bypass reach.

   c) Natural flows ranging from 1 to 600 cfs from Ole Creek (RM 44.9, 2.4 miles downstream from the Upper Release Point and 1.3 miles downstream of the mouth of the Canal Drain constructed channel) provide seasonal variability in the bypass reach for another 0.8 miles before reaching Yale Lake (RM 44.1).

5) Temperatures in the top ~36 feet of the Swift Creek Reservoir near the forebay of the Swift No. 1 Dam were found to be greater than 18°C in August. Temperatures below the ~36 foot level were cooler. This cooler water is released from deep-water intakes through the turbines into the canal supplying Swift No. 2. This cooler water reflects the temperatures of the waters at >122 feet deep in the forebay. This water maintains water temperatures below 18°C during the summer and fall. Water temperatures below 131 feet are 5-6°C in August and September and vary little throughout the year. Temperature in the bypass reach was measured at greater than 18°C.

6) Class A water quality standards apply downriver from Swift No. 1 in the canal to Swift No 2 and in the bypass reach to Yale Lake. Lake Class water quality standards apply in Yale Lake at 487 feet msl and in the Swift Creek Reservoir at 997 feet msl since Swift Creek Reservoir and Yale Lake are reservoirs with a mean detention times of greater than 15 days. Mean detention time is calculated by dividing the reservoir's mean annual minimum total storage by the thirty-day ten-year low-flow from the reservoir. Lake class conditions for temperature require that the licensee maintaining the highest attainable water quality condition that is feasible to achieve to best protect the biota.

7) There is reasonable assurance that the other water quality characteristic uses listed in the 1997 water quality standards will be met.

4.0 Conditions

Through issuance of this Certification-Order, Ecology certifies that it has reasonable assurance that the operation of the Swift No. 1 Project and activities associated with its continued operation as conditioned will be conducted in a manner that will not violate applicable water quality standards and other appropriate requirements of state law. In view of the foregoing and in accordance with 33 USC 1341, RCW 90.48.120, RCW 90.48.260, and Chapter 173-201A WAC, this water quality Certification-Order is granted to PacifCorp for the Swift No.1 Hydroelectric Project (FERC No. 2213) subject to the conditions within this Certification-Order.

Certification of this project does not authorize the Licensee to exceed applicable state water quality standards (Chapter 173-201A WAC). Furthermore, nothing in this Certification-Order shall absolve the Licensee from liability for contamination and any subsequent cleanup of surface waters, ground waters, or sediments occurring as a result of activities associated with Project operations and FERC license conditions.

4.1 General Requirements

1) The Project shall comply with all water quality standards approved by the Environmental Protection Agency (currently codified in Ch. 173-201A WAC), ground water quality standards (currently codified in Ch. 173-200 WAC), and sediment quality standards (currently codified in Ch. 173-204 WAC) and other appropriate requirements of state law. The conditions below set forth adaptive management processes and measures to achieve full compliance with standards and constitute a water quality attainment plan under the 2003 WAC 173-201A-510(5) for TDG and temperature.

2) In the event of changes or amendments to the state water quality, ground water quality, or sediment standards, or changes in or amendments to the state Water Pollution Control Act (RCW 90.48), or changes in or amendments to the Clean Water Act, such provisions, standards, criteria, or requirements shall apply to this project and any attendant agreements, orders or permits Ecology will notify the Licensee through an Administrative Order of any such changes or amendments applicable to its project.

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

4) The Licensee shall obtain Ecology review and approval before undertaking any change to the Project or Project operations that might significantly and adversely affect the water quality or compliance with any applicable water quality standard (including designated uses) or other appropriate requirement of state law.

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

6) A Hydraulic Project Approval (HPA) (under ch. 77.55 RCW) shall be acquired from the Washington State Department of Fish and Wildlife (WDFW) prior to any work in waters of the State.

7) Ecology retains the right, by further Order, to modify schedules or deadlines provided under this Certification-Order or provisions it incorporates.

8) Ecology retains the right by Administrative Order to require additional monitoring or studies or measures if it determines there is likelihood that violations of water quality standards or other appropriate requirements of state law have occurred or may occur, or insufficient information exists to make such determination.

9) Ecology reserves the right to amend this Certification-Order if it determines that the provisions hereof are no longer adequate to provide reasonable assurance of compliance with applicable water quality standards or other appropriate requirements of state law. Any such amended Certification-

Order shall take effect immediately upon issuance, unless otherwise provided in the amended Certification-Order, and may be appealed to the Pollution Control Hearings Board (PCHB) under Ch. 43 21B RCW.

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

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

12) If five (5) or more years elapse between the date this Certification-Order is issued and issuance of the new FERC license for the Project, this Certification-Order shall be deemed to be expired and denied without prejudice at such time and the Licensee shall send Ecology an updated application for a Clean Water Act Section 401 Certification that reflects then current conditions, regulations and technologies. This provision shall not be construed to otherwise limit the reserved authority of Ecology to withdraw, amend, or correct the Certification-Order before or after the issuance of a FERC license.

13) This Certification-Order may be modified or withdrawn by Ecology prior to the issuance of the license based upon significant new information or changes to water quality standards or appropriate requirements of state law.

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

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

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

17) Any work that is out of compliance with the provisions of this Certification-Order, or conditions that result in distressed, dying or dead fish, any discharge of oil, fuel, or chemicals into state waters, or onto land with a potential for entry into state waters, or turbidity greater than 5 NTU over background conditions in Swift Creek Reservoir or Yale Lake; or greater than 5 NTU over background conditions or greater than 10% in the bypass reach or canal if background conditions are greater than 50 NTU is prohibited. If these occur, the Licensee shall immediately take the following actions:

    a) Cease operations at the location of the violation to the extent such operations may reasonably be causing or contributing to the problem.

    b) Assess the cause of the water quality problem and take appropriate measures to correct the problem and/or prevent further environmental damage.

    c) Notify Ecology of the failure to comply. Oil or chemical spill events shall be reported immediately to Ecology's 24-Hour Spill Response Team at 800 258-5990 within 24 hours. Other non-compliance events shall be reported to Ecology's Federal Permit Manager at 800 424-8802.

    d) Submit a detailed written report to Ecology within five (5) days that describes the nature of the event, corrective action taken and/or planned, steps to be taken to prevent a recurrence, results of any samples taken, and any other pertinent information.

e) Observed violations at the Project shall be highlighted in the annual monitoring report.

Compliance with these requirements does not relieve the Licensee from responsibility to maintain continuous compliance with the terms and conditions of this Certification-Order or the resulting liability from failure to comply.

18) The Project shall meet the Class A narrative standards in the bypass reach and Canal, and the Lake Class standards in Swift Creek Reservoir and Yale Lake.

19) A Water Quality Management Plan (WQMP) is required. All water quality-related plans described below shall be included as separate sections of the WQMP.

4.2 Instream Flows and Habitat Flows

Flows

1) In order to meet the Class A standards listed in WAC 173-201A-030(2), the Project shall comply with the instream flow obligations identified in the Lewis River Settlement Agreement signed November 30, 2004. Details not found in the Settlement Agreement are defined in the following conditions. The flow conditions in the Settlement Agreement are provided herein as Exhibit A.

2) The Licensee, together with the Licensee for the Swift No. 2 Project shall construct two channels in the Lewis River Bypass Reach for releasing water from the Swift No.2 canal to the bypass reach at the following locations:

   a) At the "Upper Release Point" at the upstream end of the Bypass Reach. The constructed channel shall include washed, appropriately sized gravel for spawning fish, and

   b) At the exit of the "Canal Drain" approximately one mile downstream of the Upper Release Point. The constructed channel shall include washed, appropriately sized gravel for spawning fish.

3) Within 6-months after issuance of the new license for the Swift No. 2 project or the Swift No. 1 project, whichever is later, and all required Interests in Land and Permits have been obtained, the Licensee, together with the Licensee for the Swift No. 2 project, shall begin construction of the Upper Release Point described in Section 6.1.2 of the Settlement Agreement and a channel at the upstream end of the Bypass Reach between the Swift No. 1 tailrace and the plunge pool below the Swift No. 1 spillway (the Upper Release Channel) and shall complete construction as soon as practicable. Such channel shall be designed to provide fish habitat utilizing the water delivered by the Upper Release Point. The design of the channel shall be approved by Ecology.

4) As soon as practicable after the construction of the Upper Release Point is complete, the Licensee, together with the Licensee for the Swift No. 2 project, shall complete construction of the Constructed Channel as described in the Settlement Agreement Section 6.1.3 to provide fish habitat in the channel at the exit of the "Canal Drain" approximately one mile downstream of the Upper Release Point (the Canal Drain Constructed Channel). The design of the channel shall be approved by Ecology.

5) The Licensee, together with the Licensee for the Swift No. 2 Project, shall provide combined flow releases from these two release points not to exceed 55,200 acre-feet in each year (55,349 acre-feet in each leap year). The following instream flows do not conflict with Section 6.1.5 Conditions on Combined Flow Schedule of the Settlement Agreement except Ecology will not allow the Licensee, at their discretion to stop instream flow releases through the Upper Release Point as described in 6.1.5.a in the Agreement.

6) Ecology requires the following instream flow schedule which may be altered in the future by mutual agreement of Ecology and the Aquatic Coordination Committee (ACC) following the adaptive management process described in the Settlement Agreement in 6.1.4.c.

For the "Upper Release Point" the instream flow release will commence on the date specified in the Settlement Agreement and be:

November 1 to November 15	76 cfs
November 16 to November 30	56 cfs
December 1 to January 31	51 cfs
February 1 to February 28 (29 on leap years)	75 cfs (74 cfs only for 1st week in leap year)
March 1 to May 31	76 cfs
June 1 to September 23	54 cfs
September 24 to September 30	55 cfs
October 1 to October 31	61cfs

a) For the "Canal Drain" release the instream flow will commence on the date specified in the Settlement Agreement and shall be 14 cfs.

b) Adjustments to these flows will occur if monitoring indicates fish habitat would be improved using alternate flow regimes of up to 55,200 acre-feet in each year (55,349 acre-feet in each leap year). The ACC will recommend for Ecology's approval any adjustments to these flows.

7) The Licensee shall monitor stream flow at different locations described in condition 4.8.3 of this Certification-Order under Monitoring and Reporting and Section 9.8 of the Settlement Agreement. Streamflow will be measured or calculated entering each of the constructed channels and reported as daily averages. Any time instream flows are less than listed above, Ecology will be notified within 24 hours with an explanation. Spill from Swift No. 1 into the bypass will be calculated and reported for every change in gate opening.

8) Spill from the forebay of Swift No. 1 into the bypass reach will be calculated and reported for every change in gate opening in accordance with condition 4.8.3 of this Certification-Order under Monitoring and Reporting.

Habitat

9) The Licensee, together with the Licensee for the Swift No. 2 project, shall augment gravel in the bypass reach using the following five phases:

Phase 1. Within 1 year after the issuance of the license for the Swift No. 2 Project or the license for the Swift No. 1 project, which ever is later, during the first in-water work window after all applicable Permits have been obtained, place approximately 160 tons of gravel spread between locations selected by Ecology in the Lewis River bypass reach. The gravel will be obtained from existing gravel benches along the bypass reach unless Ecology determines that washed gravel is necessary because the existing source gravel is not suitable for this purpose.

Phase 2. During the spring following the first occurrence of spill of 5,000 cfs or greater at Swift No. 1 after gravel has been placed in the bypass reach as described in Phase 1, survey the bypass reach to determine sites where the gravel placed in Phase 1 naturally deposited and where fish spawning is most likely to occur. (See condition 4.8.3 of this Certification-Order under Monitoring and Reporting)

Phase 3a. If the gravel survey described in Phase 2 shows that during Swift No. 1 spill of 5,000 cfs or greater, the gravel placed in the bypass reach in Phase 1 remained in the channel where it was deposited and it provides suitable fish spawning habitat, Ecology will decide if and where additional gravel augmentation is necessary.

Phase 3b. If the gravel survey described in Phase 2 shows that during Swift No. 1 spill of 5,000 cfs or greater, the gravel placed in the bypass reach during Phase 1 provides suitable fish spawning habitat, and more gravel in these areas would provide additional fish spawning habitat,

then, during the first in-water work window following the gravel survey described in Phase 2, and after all applicable Permits have been obtained, distribute up to 160 tons of gravel among the sites identified in Phase 2. If Ecology determined in Phase 1 that existing gravel on the benches of the bypass reach may be used for augmentation, such gravel will be used in this Phase 3b, otherwise Ecology may require washed gravel.

Phase 3c. If the gravel survey described in Phase 2 shows that during Swift No. 1 spill of 5,000 cfs or greater, the gravel placed in the bypass reach during Phase 1 was transported out of the reach or to the benches outside the bypass flow channel, Ecology may decide that no further gravel augmentation is necessary.

Phase 4. During the spring following the first occurrence of spill of 5,000 cfs or greater at Swift No. 1 after the gravel augmentation described in Phase 3b, survey the bypass reach to determine the location of the augmented gravel. (See condition 4.8.3 of this Certification-Order under Monitoring and Reporting)

Phase 5a. If the gravel survey described in Phase 4 shows that the gravel remained where it was placed during Phase 3b, Ecology may decide that no further gravel augmentation is necessary.

Phase 5b. If the gravel survey described in Phase 4 shows that the gravel is no longer where it was placed in Phase 3b and the gravel is not providing suitable fish spawning habitat, then, during the first in-water work window following the gravel survey described in Phase 4, and after all applicable Permits have been obtained, distribute up to 160 tons of gravel among the sites identified in Phase 2. If Ecology determined in Phase 1 that existing gravel on the benches of the bypass reach may be used for augmentation, such gravel will be used in this Phase 5b, otherwise Ecology may require washed gravel. (See condition 4.8.3 of this Certification-Order under Monitoring and Reporting)

To augment and maintain gravel patches at the specific sites where natural gravel deposition would likely occur and fish spawning is likely, Phases 4 and 5b may be repeated up to two times for a total five gravel augmentation events during the term of the Swift No. 2 and Swift No. 1 licenses (Phase 1, Phase 3b, Phase 4+5b, Phase 4+5b, and Phase 4+5b).

10) The Licensee, together with the Licensee for the Swift No. 2 project shall perform instream monitoring to determine the success of fish salmonid rearing and spawning in the mainstem Lewis River Swift bypass reach and constructed channels, and passage to both constructed channels. A monitoring program as described in condition 4.8.3 of this Certification-Order under Monitoring and Reporting shall include the following:

Conduct surveys of juvenile and adult fish populations (including fish size, species, and location) in the Upper Release Point Constructed Channel, the Canal Drain Constructed Channel and the mainstem Lewis River bypass reach according to the following schedule during the term of the Swift No. 2 and Swift No. 1 licenses:

a) Quarterly for one year beginning in the year after the first full year of operation of both the Upper Release Point and Canal Drain constructed channels (year 2 of operation). Waiting one full year after both release points and channels are operational will allow the aquatic ecosystem to become established. (See condition 4.8.3 of this Certification-Order under Monitoring and Reporting)

b) Quarterly for one year in the fourth year after the first full year of operation of both the Upper Release Point and Canal Drain constructed channels (year 5 of operation). Surveying in the fourth year will determine fish response to the combined flow schedule described above in condition 4.2.6 under Flows. (See condition 4.8.3 of this Certification-Order under Monitoring and Reporting)

c) Quarterly for one full year beginning one year after each change in the combined flow schedule, in the event that Ecology, together with the ACC, implements a change in the combined flow schedule as described in condition 4.2.6 under Flows above and in Section 6 of the Settlement Agreement. (See condition 4.8.3 of this Certification-Order under Monitoring and Reporting)

d) Quarterly for one year after reintroduction of anadromous fish into Yale Lake in Year 13 of the Yale License unless the Services determine reintroduction of anadromous fish into Yale Lake is inappropriate (pursuant to Section 4.1.9 of the Settlement Agreement) or a survey in the same year is being conducted under "c" above. (See condition 4.8.3 of this Certification-Order under Monitoring and Reporting)

e) Quarterly for one year commencing one year after construction of upstream fish passage at the Swift Projects unless a survey in the same year is being conducted under "c" above. (See condition 4.8.3 of this Certification-Order under Monitoring and Reporting)

11) During the years listed above in 4.1(10)(a-e), redd surveys will be conducted once every two weeks from September 15th to November 15th and February 1st to May 31st in accordance with condition 4.8.3 of this Certification-Order under Monitoring and Reporting.

4.3 Total Dissolved Gas (TDG)

1) The Project shall not cause any exceedance of the TDG water quality criteria as specified in WAC 173-201A 030 (2)(c)(iii) in the bypass reach or Canal, WAC 173-201A 030 (5)(c)(iii) in Yale Lake, and 173-201A-060 (4)(a) in any waters of the Project.

2) The Licensee shall operate Swift No. 1 Dam to maintain the TDG associated with air-injected to turbine flows to 110% or less TDG.

   a) The Licensee shall perform water quality monitoring in turbine water in the forebay and below Swift No. 1 Dam for turbine air injection generated TDG in accordance with Section 4.8.3 of this Certification-Order under Monitoring and Reporting.

   b) If, over the term of the license, turbines are replaced or modified, design such turbines to minimize TDG production.

3) The Licensee shall manage spill to limit TDG production to 110% or less saturation

   a) The Licensee shall monitor spill water beginning during the first spill event after this Certification-Order is issued and as specified in the monitoring plan in Exhibit B and conditions 4.2.8 under Flows and 4.8.3 under Monitoring and Reporting of this Certification-Order.

   b) Within six (6) months of the discovery of any exceedance of the 110% TDG criterion caused by spill, the Licensee shall submit a TDG Water Quality Attainment Plan (TDG WQAP) to Ecology for review and approval. The TDG WQAP plan shall include:

      i. A description of standard Project operations with regard to minimizing TDG associated with spills;

      ii. A description of how the Project will minimize all spills that produce TDG exceedances at the Project;

      iii. An evaluation of all potential and preferred structural and operational improvements to minimize TDG production;

      iv. A timeline showing when operational adjustments will occur;

      v. A schedule for construction; and

vi. Monitoring plans to further evaluate TDG production and to test effectiveness of gas abatement controls.

c) The Project shall operate according to the approved TDG WQAP with the objective of eliminating TDG exceedances.

d) Upon approval of the TDG WQAP, the Licensee shall immediately begin the necessary steps identified in the TDG WQAP to eliminate TDG criteria exceedances.

e) If monitoring to test the effectiveness of gas abatement controls implemented through the TDG WQAP shows the TDG abatement measures identified in the Plan and subsequently employed are not successful in meeting the water quality criterion within the first ten (10) years of discovery of TDG criterion exceedances caused by spill, Ecology will require further activities to meet water the quality criterion. Significant structural or operational revisions that may impose potentially unreasonable costs or create potentially unreasonable societal effects may be evaluated as part of a formal Use Attainability Analysis consistent with the federal and state water quality regulations after the ten year compliance period has ended.

4) Provided that all reasonable operational efforts are made to minimize TDG exceedances and Ecology is notified within 24 hours after the onset of the spill, compliance with the 110% TDG criteria does not apply when:

a) Actual or forecasted flows in the Lewis River exceed the rate equivalent to the seven-day, ten-year flood frequency (7Q10), as defined in WAC 173-201A-060(4)(a). At the writing of this Certification-Order, the 7Q10 flow for the Lewis River at Swift No. 1 Dam is 21,322 cfs. Either the Licensee or Ecology may reassess and propose a revised value for the 7Q10 flow. Modification and application of the 7Q10 flow requires Ecology's approval.

Because the Project exerts some control over the timing and amplitude of storm flows, a qualifying 7Q10 event for the purposes of the TDG criteria exemption includes flows accompanied by an actual or forecasted large storm event that provides an equivalent amount of water to the drainage basin, regardless of flows at Swift No. 1 Dam. Calculations of such qualifying events shall follow language contained in the Settlement Agreement pertaining to High Runoff Procedures (SA 12 8) which states:

> *"PacifiCorp shall obtain 3-day river flow forecasts from a reputable third party forecasting organization (which may include the National Weather Service's River Forecasting Center) for the Lewis River Watershed. This 3-day river flow forecast shall be used by PacifiCorp in its forecast-based high runoff procedure as described below. PacifiCorp shall periodically evaluate the forecasts being used against other commonly available forecasts, with the goal of improving forecasting accuracy for flood management through the use of evolving technology, to the extent practicable."*
>
> *"During the Flood Management Season, PacifiCorp shall calculate the "Forecasted Flow" for the Lewis River from the 3-day forecast by determining the forecasted flow that has an 85% probability of occurring. In the event that it appears that the Forecasted Flow will result in inflows significant enough to utilize a portion of the 17 feet of hole, as defined in the Manual, reserved for flood management purposes, PacifiCorp shall make a Pre-Release to provide additional capacity to store inflows into the reservoirs during the high-runoff event. Once the total hole is reduced to 17 feet, PacifiCorp shall continue to follow the flow release procedures contained in the Manual as of the Effective Date."*

b) Short term spills are necessary to protect public safety and respond to volcanic activity.

5) During high flows, greater than the 7Q10, the Licensee shall manage spill levels to minimize TDG production

4.4 Temperature

1) Swift No. 1 Dam, Swift No 1. Tailrace and Bypassed Natural River Reach.

   The project shall not cause any violation of the temperature water quality criteria as specified for Class 'A' waters, WAC 173-201A-030(2)(c)(iv), in the Swift No. 1 tailrace, the canal or the bypass reach. The Licensee shall not cause these waters to exceed 18°C. If the presence or operation of the Dam causes violation of these criteria, the Licensee shall modify its operation to the extent necessary to ensure that the project does not cause such exceedance.

2) Swift Creek Reservoir and Yale Lake.

   The project shall not cause any violation of the temperature water quality criteria as specified for Lake Class waters in WAC 173-201A-030(5)(c)(iv) in Yale Lake or Swift Creek Reservoir. If the presence or operation of the dam causes violation of these criteria, the Licensee shall modify its operation to the extent necessary to ensure that the Project does not cause such exceedance. The Lake Class temperature criterion that applies to the Swift Creek Reservoir and Yale Lake mandates no measurable change from natural conditions.

3) If the presence or operation of the Dam causes water temperature in the canal or bypass reach to violate the criteria, the Licensee shall modify its operation to the extent necessary to ensure that the project does not cause such violation:

   a) The Licensee shall develop a Temperature Water Quality Attainment Plan (TWQAP) that provides a detailed strategy for maintaining the highest attainable water quality condition to best protect the biota with respect to temperature that is feasible to achieve. The TWQAP shall identify and evaluate potential reasonable operational and structural changes to improve temperature. Any changes that would conflict with other conditions of this Certification-Order require prior approval by Ecology. The plan shall also identify the temperature regime that is feasibly achievable, such that the temperature is protected to the highest degree feasible. A Responsiveness Summary shall be incorporated into the TWQAP that evaluates the effectiveness of the modifications (if any) and identifies follow-up studies and actions that can be performed to further improve temperature based on the initial findings.

   b) A draft of the TWQAP shall be submitted to Ecology within one (1) year of obtaining information that water quality criteria for temperature have been exceeded. The TWQAP must include a reasonable schedule for carrying out an adaptive process for evaluating feasible technical and operational changes that will improve water quality protection within ten (10) years of license renewal. This process may include modeling and physical testing of operational changes, and modeling changes in structural revisions and testing those structural revisions that can reasonably be implemented within the ten year period. Significant structural or operational revisions that may impose potentially unreasonable costs or create potentially unreasonable societal effects may be evaluated as part of a formal Use Attainability Analysis consistent with the federal and state water quality regulations after the ten year compliance period has ended.

4) The Licensee shall monitor for temperature in accordance with Section 4.8.3 of this Certification-Order under Monitoring and Reporting.

4.5 Construction Projects, Miscellaneous Discharges, and Habitat Modifications

The following applies to all in-water or over-water work related to the Project that can impact surface- or ground-water quality. This includes, but is not limited to, construction, operation, and maintenance of fish collection structures, generation turbines, penstocks, hatcheries, transportation facilities, portable toilets, boat ramps, transmission corridors, structures, and staging areas. This also includes emergencies for all activities related to project operation.

1) If water quality exceedances are predicted as being unavoidable during construction or maintenance of a project, a short-term modification must be applied for in writing to Ecology at least three (3) months prior to project initiation. If any project has a long-term impact on a regulated water quality parameter, characterization monitoring must be performed for the impacted parameter(s), and a series of protection plans (described below) must be included in the Water Quality Protection Plan discussed below. This may require additional management practices to minimize impacts over the license period.

2) A Water Quality Protection Plan (WQPP) shall be prepared, and followed, for all project-related work that is in- or near-water that has the potential to impact surface- and/or groundwater quality. The WQPP shall include control measures to prevent contaminants from entering surface water and groundwaters, and shall include, but not be limited to, the following elements:

   a) A Stormwater Pollution Prevention Plan (SWPPP) shall specify the Best Management Practices (BMPs) and other control measures to prevent contaminants entering the Project's surface water and groundwaters. The SWPPP shall address the pollution control measures for the Licensee's activities that could lead to the discharge of stormwater or other contaminated water from upland areas. The SWPPP must also specify the management of chemicals, hazardous materials and petroleum (spill prevention and containment procedures), including refueling procedures, the measures to take in the event of a spill, and reporting and training requirements.

   b) In-Water-Work Protection Plan (IWWPP). The In-Water-Work Protection Plan shall be consistent with the SWPPP and shall specifically address the BMPs and other control measures for activities that require work within surface waters. Turbidity and dissolved oxygen shall be monitored upstream of the location where in-water construction is taking place and at the point of compliance (as defined in WAC 173 201A-110(3)(a-d)) during construction. Samples shall be taken at a minimum of once each day during construction in or adjacent to any water bodies within the project area that may be affected by the construction. The IWWPP shall include all water quality protection measures consistent with a Hydraulic Project Approval (HPA) for the project.

   c) The WQPP shall include procedures for monitoring water quality, actions to implement should a water quality exceedance occur, and procedures for reporting any water quality violations to Ecology. The WQPP shall include all water quality protection measures consistent with a HPA for the project. The WQPP shall be submitted to Ecology for review and approval at least three (3) months prior to project initiation, and a copy of the WQPP shall be in the possession of the on-site construction manager and available for review by Ecology staff whenever construction work is under way.

   d) When a construction project meets the coverage requirements of the National Pollution Elimination System, (NPDES) permit and State Waste Discharge General Permit for Stormwater Discharges associated with construction activity, the Licensee shall either, at Ecology's discretion, apply for this permit and comply with the terms and conditions of the permit or apply for and comply with the terms of an individual NPDES permit.

3) Best Management Practices

   a) Work in or near the reservoir, water within the dam, the river, or any wetlands shall include all reasonable measures to minimize the impacts of construction activity on waters of the state. Water quality constituents of particular concern are turbidity, suspended sediment, settleable solids, oil and grease, and pH. These measures include use of Best Management Practices (BMPs)to control erosion and sedimentation, proper use of chemicals, oil and chemical spill prevention and control, and clean-up of surplus construction supplies and other solid wastes.

   b) During construction, all necessary measures shall be taken to minimize the disturbance of existing riparian, wetland or upland vegetation.

c) All construction debris shall be properly disposed of on land so that the debris cannot enter a waterway or cause water quality degradation to state waters. Retention areas or swales shall be used to prevent discharging of water from construction placement areas.

d) The Licensee shall ensure that any fill materials that are placed for the proposed habitat improvements in any waters of the state do not contain toxic materials in toxic amounts.

4) Maintain Turbidity Standards

a) Certification of this project does not authorize the Licensee to exceed the turbidity standard beyond the mixing zone described below. Turbidity in Class A waters of the bypass reach and canal shall not exceed 5 NTU over background turbidity when turbidity is 50 NTU or less, or have more than a 10 percent increase in turbidity when the background turbidity is more than 50 NTU. Turbidity in Lake Class waters of Swift Creek Reservoir and Yale Lake shall not exceed 5 NTU of background turbidity.

b) For Class A waters, a mixing zone is established within which the turbidity standard is waived, consistent with WAC 173-201A-100(7) and –110(3). The mixing zone is established to allow only temporary exceedances of the turbidity criteria during and immediately after in-water work. The temporary turbidity mixing zone shall be as follows:

i. For waters up to 10 cfs flow at the time of construction, the point of compliance shall be 100 feet downstream from activity causing the turbidity exceedance.

ii. For waters above 10 cfs up to 100 cfs flow at the time of construction, the point of compliance shall be 200 feet downstream from activity causing the turbidity exceedance.

iii. For waters above 100 cfs flow at the time of construction, the point of compliance shall be 300 feet downstream from activity causing the turbidity exceedance.

c) For Lake Class waters, certification of this Project does not authorize the Licensee to exceed the turbidity standard beyond the mixing zone described in (d) and (e) below.

d) Step 1. Mixing zones shall not be allowed unless it can be demonstrated to the satisfaction of Ecology that:

i. Other siting, technological, and managerial options that would avoid the need for a lake mixing zone are not reasonably achievable;

ii. Overriding considerations of the public interest will be served; and

iii. All technological and managerial methods available for pollution reduction and removal that are economically achievable would be implemented prior to discharge

e) Step 2. Mixing zones, singularly or in combination with other mixing zones, shall comply with the most restrictive combination of the following:

i. Not exceed ten percent of the waterbody volume;

ii. Not exceed ten percent of the waterbody surface area (maximum radial extent of the plume regardless of whether it reaches the surface); and

iii. Not extend beyond fifteen percent of the width of the waterbody.

5) The above conditions do not relieve the project owner from the need to obtain all the applicable permits. Activities that could discharge pollutants to waters of the state must use appropriate Best Management Practices to protect water quality

4.6 Oil Spill Prevention and Control

1) No oil, fuel, or chemicals shall be discharged into waters of the state, or onto land with a potential for entry into waters of the state as prohibited by Ch. 90.56 RCW and Ch. 90 48 RCW.

2) Contain and remove from the water, visible floating oils released from construction or project operation.

   a) In the event of a discharge of oil, fuel or chemicals into state waters, or onto land with a potential for entry into state waters, immediately begin and complete containment and clean-up efforts, taking precedence over normal work. Clean-up shall include proper disposal of any spilled material and used clean-up materials.

   b) Do not use emulsifiers or dispersants in waters of the state without prior approval from Ecology, Southwest Regional Office.

   c) Within three (3) months of receiving a license from FERC, establish an Ecology-approved on-site spill cleanup material inventory. Maintain this on-site inventory and a complete inventory list.

   d) Project Operators shall be familiar with and trained on use of oil spill cleanup materials. In the event of an oil spill, properly dispose of used/contaminated materials and oil and as soon as possible restock new supplies. Include records of proper disposal in the oil consumption records and keep copies of disposal records of contaminated cleanup supplies on-site for inspection.

   e) Ensure that operational work boats and trained boat operators are available on short notice in the event of a spill. Install mechanisms as appropriate to safely launch or lower work boats into areas where work boats would be deployed in the event of an oil spill. These mechanisms must be pre-approved by Ecology.

   f) Keep SPCC Plans as required and historical spill records on-site. Provide these to Ecology immediately upon request.

   g) Identify and map floor drains. Post these maps at the Project in a conspicuous location for use by Operators and other personnel in the event of an oil spill. Seal floor drains that are no-longer needed.

   h) Install, or have on site to deploy stair-cases, ladders, etc which will allow for oil spill response staff to safely reach areas that could, in the event of an oil spill, need to be accessed to deploy sorbent pads and boom materials.

3) Oil-Water Separators (OWS)

   a) Within three months of issuance of the FERC license, submit a maintenance plan for the OWS to Ecology for approval. This maintenance plan must include a process to periodically test the oil-stop valves and provide assurance that they will work as designed. (See condition 4.8.3 of this Certification-Order under Monitoring and Reporting)

   b) OWS shall only admit rain and water run-off that originates in the containment area that is intended to drain into the OWS.

   c) Perform periodic and appropriate maintenance and inspection on a schedule to include sediment removal. (See condition 4.8.3 of this Certification-Order under Monitoring and Reporting)

   d) Clean and service the OWS after each event where oil is introduced into the OWS.

   e) Evaluate each OWS for inflows to account for the total volume of all transformers located in the containment area plus 10 per cent. Verify and conduct corrective action that will insure

that oil would not be "washed through" the OWS if a failure of all containers in the containment area occurs during a major rain event, .

4) Transformers

a) Transformer deck containment area surfaces must be impervious. Conduct periodic inspections and re-surface areas, fill cracks, caulk metal plate footings or otherwise ensure that containment areas will contain all spill fluids.

b) Obtain prior approval from Ecology before breaching containment areas for reasons other than containment area maintenance.

c) Conform to industry standards for protecting water quality, and preventing and containing oil spills when transporting transformers and transformer oil.

d) Snowy or icy conditions require daily inspections of transformer deck containment area including an inspection of the drains leading to the OWS for freeze-up conditions. Remove any observed rain water pooling in the containment areas. (See condition 4.8.3 of this Certification-Order under Monitoring and Reporting)

e) Retrofit the secondary containment area so in the event of catastrophic oil loss from a transformer or transformers, this oil would either be fully contained in the secondary containment area or drain into the oil-water separator without discharge into waters of the state.

5) Sumps

a) Locate oil sensors on the surface of the water in each sump in addition to the oil sensors located at the bottom of each pumping cycle. Inspect and test these sensors every three (3) months or sooner if needed to insure that they will work as designed. Include in the inspection provisions to verify that the oil sensors located at the bottom of each pumping cycle are properly placed at the proper level. Visually inspect all of these areas each week or immediately if oil is suspected to be present such as in the event of an oil sensor alarm or the observance of an oil or grease spill in the turbine pit of sufficient volume to reach the sump. Any oil detected in the sumps requires immediate cleanup and Emergency Management Division (EMD) and National Response Center (NRC) notification. (See condition 4.8.3 of this Certification-Order under Monitoring and Reporting)

b) Immediately repair oil leaks in the turbine pit that are of sufficient volume to reach the sump and that can not be contained by placing a container underneath the leak. Immediately repair water leaks located in the turbine pit area that are leaking at a volume of greater than one gallon per hour.

c) Install or deploy hand rails and mechanisms so the sump covers can be removed for a visual inspection of the sump. Provide water-proof lighting in the sumps or spotlights adequate to view the surface water in the sumps. Provide a mechanism to satisfactorily deploy and recover sorbent boom in the sumps at each project.

6) Oil, fuel and chemical storage containers, containment areas, and conveyance systems

a) Provide proper containment around each storage container (including transformers) or around a combination of storage containers as appropriate and agreed upon by Ecology. Proper containment equals the volume of the container plus 10 per cent.

b) Recalculate required containment areas to insure proper containment still exists after major equipment changes. Example: when converting from water cooled transformer to an air

cooled unit, re-calculate oil volume and compare to containment area. Calculate containment volumes from *maximum* storage volumes, not normal oil level volumes.

c) Provide external oil level gauges for governor oil tanks, transformers and other oil tanks that contain over 100-gallons of oil. Provide appropriate level markings for these gauges. Provide a sign or other indicator at each tank, near the tank level gauge, that describes these level markings and the relationship of each inch vs. how many gallons (in the case of a glass tube type of gauge). Dial gauges must also describe oil volume in gallons or have a sign or other means provided at each reservoir that adequately describes dial movement in relation to gallons. Provide a sign or other indication that shows ¼, ½, ¾, and full gauge readings or indications in gallons. If equipment must be placed in a special mode of operation, prior to level observance, this must also be posted. Example: wicker gate ram position or other hydraulic ram positions, prior to oil level reading. (See condition 4.8.3 of this Certification-Order under Monitoring and Reporting)

d) Regularly check all fuel hoses, oil drums, oil or fuel transfer valves and fittings, etc, for drips and leaks. Maintain and properly store them to prevent spills into state waters. (See condition 4.8.3 of this Certification-Order under Monitoring and Reporting)

e) Do not refuel equipment within 50 feet of rivers, creeks, wetlands, or other waters of the state.

f) Provide full oil spill containment capacity plus 10 per cent when working on transformers and other equipment that might spill or drip oil.

g) Inspect containers once per week. Maintain container Inspection sheets to include: maximum container volume and an exact reading recording of the oil level by the staff/operator conducting the inspection. Weekly inspection readings must be consistent; provide training to the staff/operator to ensure consistent and accurate readings. (See condition 4.8.3 of this Certification-Order under Monitoring and Reporting)

h) Keep oil consumption records maintained on-site; provide these records to Ecology immediately upon request and in the annual report.

i) In the event that the project modifies the oil transfer operation to include hard-plumbing to reservoirs such as the governor oil tank from the oil tank room, or other extensive modifications, the Licensee must notify and receive approval from Ecology.

j) Contain wash water containing oils, grease, or other hazardous materials resulting from wash-down of equipment or working areas for proper disposal, and do not discharge this water into state waters.

7) Other

a) Maintain site security at the project site to reduce chance of oil spills.

b) Initiate, plan for, document, and train staff for the deployment of General Response Plan and boom strategies for each project. Review and update as needed annually.

4.7 Pesticide Applications (see definition of pesticide in Exhibit C)

1) Prior to the application of pesticides to waters of the state, coverage under applicable Aquatic Pesticides Permit shall be obtained, and conformance with any other applicable state requirement such as SEPA, shall be attained.

2) Best Management Practices and other control measures for the application of pesticides to waters of the state must be addressed in an In-Water-Work Protection Plan. An appropriate water quality

monitoring plan shall be developed prior to the application and shall be implemented for all related work.

3) Prior to the use of pesticides adjacent to waters of the state, the Licensee shall follow Best Management Practices to avoid the entry of such materials into waters of the state. Applicable Best Management Practices include, but are not limited to, such actions as hand application and avoiding drift of materials into the water.

4.8 Monitoring and Reporting

1) The water quality monitoring component of the Licensee's application to FERC is incorporated as a requirement of this Certification-Order and shall be followed except as further modified by this Certification-Order. Within 90 days of issuance of the new FERC license for the Project, the Licensee shall submit to Ecology for its review and approval a plan for any additional monitoring requirements set forth in this Certification-Order.

2) Monitoring pursuant to the requirements set forth in this Certification-Order shall begin as soon as practicable and in no event shall monitoring begin any later than one (1) year after issuance of the new FERC license for measures that do not specify a start date.

3) Representative water quality measurements shall be made for the parameters listed in Table 2 at the identified locations and frequencies. Further monitoring is required or may be required under compliance schedules or to respond to specific problems not identified at the time of the Certification-Order.

Table 2. Water Quality Monitoring Schedule

Parameter	Location	Depths (ft)	Frequency	Duration	Condition No.
Flow	Swift Reservoir Swift No 1 Dam spill gate	Swift Creek Reservoir elevation times gate width times gate height	Every change in gate opening when spill occurs	Ongoing for the term of the license	4.2.8 Flows
	Upper Constructed Channel release point	n/a	15 minutes	Ongoing for the duration of the license	4.2.7 Flows
	Lower Constructed Channel release point "Canal Drain"	n/a	15 minutes	Ongoing for the duration of the license	4.2.7 Flows
Gravel	Bypass Reach	Bottom and sides	After the first gravel augmentation: Spring following first occurrence of spill of 5,000 cfs or greater into the bypass reach (Condition 4.1 Habitat phase 2)	One time	4.2.9 Phase 2 Habitat

Parameter	Location	Depths (ft)	Frequency	Duration	Condition No.
	Bypass Reach	Bottom and sides	After the second gravel augmentation: Spring following first occurrence of spill of 5,000 cfs or greater into the bypass reach (Condition 4.1 Habitat phase 4)	One time	4.2.9 Pase 4 Habitat
	Bypass Reach	Bottom, where gravel deposition is likely to occur in likely fish spawning areas	Spring following third and fourth occurrence of spill of 5,000 cfs or greater into the bypass reach (Condition 4.1 Habitat phase 5b).	One to three times	4.2.9 Pase 5b Habitat
Fish rearing and spawning	Both constructed channels and the bypass reach from river mile 44.1 to 47.3	n/a	Quarterly	One year. After first full year of operation of both constructed channels	4.2.10a Habitat
	Both constructed channels and the bypass reach from river mile 44.1 to 47.3	n/a	Quarterly	One year. Beginning in the fourth year after first full year of operation of both constructed channels	4.2.10b Habitat
	Both constructed channels and the bypass reach from river mile 44.1 to 47.3	n/a	Quarterly	One year. Beginning one year after each change in the combined flow schedule	4.2.10c Habitat
	Both constructed channels and the bypass reach from river mile 44.1 to 47.3	n/a	Quarterly	One year. After reintroduction of anadromous fish into Yale Lake	4.2.10d Habitat

Parameter	Location	Depths (ft)	Frequency	Duration	Condition No.
		n/a	Quarterly	One year. Beginning one year after construction of upstream fish passage at the Swift Projects.	4.2.10e Habitat
Redds	Both constructed channels and the bypass reach from river mile 44.1 to 47.3	Bottom	Once every two weeks from October 1-November 15 and from February 1 to May 31	Ongoing	4.2.3 Habitat
Total Dissolved Gas (TDG)	Swift No. 1 Lake forebay	15	Hourly	1. One year after issuance of this Certification-Order 2. One month before and after planned departure from normal operations reallocate the duration or the quantity of air injected into the turbines to the point that the 110% criterion is likely exceeded. 3. Ongoing if exceedances occur until three months after such exceedances are corrected.	4.3.2a

Parameter	Location	Depths (ft)	Frequency	Duration	Condition No.
	Swift No. 1 turbine outlets	15	Hourly	1. One year after issuance of this Certification-Order 2. One month before and after planned departure from normal operations reallocate the duration or the quantity of air injected into the turbines to the point that the 110% criterion is likely exceeded. 3. Ongoing if exceedances occur until three months after such exceedances are corrected.	4.2.2a
	Swift No. 1 bypassed natural river reach below Swift No. 1 and below aerated zone	10-15	During spill events through the spillway. Hourly, as close as possible to 24 hrs before to 48 after event	Ongoing unless TDG during spill is found not exceed 110% during river flows approaching 21,322 cfs See Exhibit B for the TDG Monitoring Plan	4.3.3a & 4.2.8 Flows
Temperature	Swift No. 1 forebay	1, 5, 10, 20, 40, 60, 80, 120, 145	May 1–Oct 31: Hourly	Ongoing until temperature behavior in the forebay of Swift No. 2, the upper constructed channel, the canal drain channel, and the bypass reach are understood.	4.4.4
	Swift No. 1 tailrace canal	1	Hourly all year	Ongoing	4.4.4

Parameter	Location	Depths (ft)	Frequency	Duration	Condition No.
	Bypassed natural river just upstream and downstream from the mouth of Ole Creek	1	Hourly	Ongoing	4.4.4
Oil & Grease	Record amounts of oil, grease and hydraulic fluids used	n/a	Weekly	Ongoing for the term of the license	4.6.6g
	Sumps	Surface and bottom	At least weekly (visual) At least three months (test)	Ongoing for the term of the license	4 6.5a
	Trans-former deck	Drains	Daily during icy conditions	Ongoing for the term of the license	4 6.4d
	Oil tanks, transformers, other oil tanks >100 gallons	n/a	At least weekly	Ongoing for the term of the license	4.6.6c
	Fuel hoses, oil drums, oil & fuel transfer valves and fittings.	n/a	Weekly	Ongoing for the term of the license	4.6.6d
	Oil-water separators	n/a	Periodically test oil stop valves	Ongoing for the term of the license	4.6.3a
	Oil-water separators	n/a	Regularly prior to cleaning	Ongoing for the term of the license	4.6.3c

4) All water quality monitoring shall meet accepted standards for data quality. The monitoring plan shall include monitoring and data evaluation procedures and objectives that ensure data quality. Data quality procedures shall be consistent with United States Environmental Protection Agency and Ecology guidance on this subject.

5) The monitoring plan shall be updated annually by amendment to reflect any changes in monitoring parameters, schedule, or methodology. These amendments, or a notification of no change, shall be included in the Annual Report further described below in condition 4.8.6 and in Section 14.2.6 of the Settlement Agreement. Ecology will provide its revisions and approval for the monitoring plan within three (3) months of receipt of the amendment.

6) Data from all water quality monitoring shall be summarized and reported in a format approved by Ecology and submitted annually. The monitoring report shall include sample dates, times, locations, and results. Any exceedances of numeric state water quality standards as well as any deviation from the flow requirements found in this Certification-Order shall be highlighted. The report shall be included in the Annual Report provided to FERC as described in Section 14.2.6 of the Settlement Agreement; provided that if Ecology determines that the format of the Annual Report does not meet Ecology's needs, the Licensee shall modify or supplement the report so that it is acceptable to Ecology. Data reports shall be submitted to Ecology's, Water Quality Program, Southwest Regional Office.

7) The Licensee may request to modify or eliminate parts of the monitoring program after a minimum of the ongoing monitoring requirements or a period of five (5) years of reliable data collection following issuance of the new license. Modifications to this monitoring schedule can be requested by submitting to Ecology reasons for the modifications along with a modified monitoring plan.

8) A more rigorous water quality sampling program for the parameters listed in Table 2 or additional parameters may be required by Ecology if necessary to protect water quality in the future based on monitoring results, regulatory changes, changes in project operations and/or requirements of TMDLs, or to otherwise provide reasonable assurance of compliance with state water quality standards.

5.0 Order

Any person who fails to comply with any provision of this Certification-Order shall be liable for a penalty under the Clean Water Act of up to (20) twenty thousand dollars per day and, under the state Water Pollution Control Act, for a penalty of up to ten (10) thousand dollars per day per violation or such other amount as may be authorized under state law as exists now or may be amended during the term of the license.

6.0 Appeal Process

You have the right to appeal this Order to the Pollution Control Hearings Board. Pursuant to chapter 43.21B RCW, your appeal must be filed with the Pollution Control Hearings Board, and served on the Department of Ecology within thirty (30) days of the date of your receipt of this document.

To appeal this Order, your notice of appeal must contain a copy of the Ecology Order you are appealing.

Your appeal must be filed with:

The Pollution Control Hearings Board

4224 – 6th Avenue SE, Rowe Six, Bldg. 2
P.O. Box 40903
Lacey, Washington 98504-0903

Your appeal must also be served on:

The Department of Ecology
Appeals Coordinator
P.O. Box 47608
Olympia, Washington 98504-7608

In addition, please send a copy of your appeal to:

Federal Permit Appeals Coordinator
Department of Ecology
P.O. Box 47600
Olympia, Washington 98504-7600

For additional information: Environmental Hearings Office Website: http://www.eho.wa.gov

Your appeal alone will not stay the effectiveness of this Order. Stay requests must be submitted in accordance with RCW 43.21B.320. These procedures are consistent with Chapter 43.21B RCW.

DATED this 9th day of October, 2006, at Olympia, Washington.

Kelly Susewind, P.E., P.G.
Southwest Region Manager
Water Quality Program

Exhibit A
Section 6.1 of the Settlement Agreement Concerning Relicensing of the Lewis River Hydroelectric Projects signed November 30, 2005

6.1 Flow Releases in the Bypass Reach; Constructed Channel

The Licensees shall provide flow releases to the reach of the Lewis River downstream of Swift No. 1 ending at Yale Reservoir, which parallels the Swift No. 2 canal (the "Bypass Reach"), for the duration of each New License subject to the terms and limitations in this Section 6.1. The Licensees shall not be required to schedule flow releases in any year that exceeds, in the aggregate for that year, 55,200 acre-feet (55,349 acre-feet in each leap year) (the "Annual Release Quantity"). These amounts are sufficient to supply the flows described in Section 6.1.3(g) below. The Licensees shall release the Annual Release Quantity at the following two release points (the "Release Points"): (a) from and as measured at the outflow from a water delivery structure to be constructed at the upstream end of the Bypass Reach (such water delivery structure being referred to as the "Upper Release Point"); and (b) to a constructed channel described in Section 6.1.3 below (defined in Section 6.1.3(a) as the "Constructed Channel") from and as measured at the existing canal drain (the "Canal Drain") that is located approximately one-third the length of the canal downstream of the Swift No. 1 tailrace. The monthly schedule of flow releases from these two Release Points are together referred to as the "Combined Flow Schedule," which shall be determined as provided in Section 6.1.4 below. 6.1.1 Commencement of Flow Releases from the Canal Drain. The Licensees shall commence flow releases from the Canal Drain at the time that Swift No. 2 reconstruction is complete. Prior to completion of the Upper Release Point, the Licensees shall only be obligated to release the maximum discharge from the Canal Drain, without modification, estimated to be 47 cfs.

6.1.2 Construction of Upper Release Point

The Licensees shall determine the location to construct the Upper Release Point and shall design the necessary Project modifications to deliver water at the upstream end of the Bypass Reach by the first anniversary of the Effective Date. The Licensees shall commence construction of the Upper Release Point within six months after Issuance of the New Licenses for the Swift No. 1 Project or the Swift No. 2 Project, whichever is later, and all required Interests in Land and Permits have been obtained, and shall complete construction as soon as practicable.

6.1.3 Constructed Channel

a) Swift Bypass Habitat Channel Reconnaissance Study. The Licensees, in Consultation with the Parties, have commissioned a study, conducted by Northwest Hydraulic Consultants, Inc., dated December 9, 2003, entitled "Swift Bypass Habitat Channel Reconnaissance Study" (the "Feasibility Report"), attached as Schedule 6.1.3, concerning the biological and technical feasibility of developing a constructed channel in the Bypass Reach downstream of the Swift No. 2 Canal Drain. The purpose of such a channel is to maximize the biological benefits of Canal Drain flows and to enhance connectivity with Yale Reservoir (the channel to be built and any measures undertaken in the lower Bypass Reach to connect that channel to Yale Reservoir shall be referred to collectively in this Agreement as the "Constructed Channel").

b) Funding for the Constructed Channel. The Licensees shall provide funds in a Tracking Account for the construction of the Constructed Channel, including the costs of design, Permitting, construction, and the acquisition of necessary Interests in Land (the "Construction Costs"), subject to the cost limitations provided below. Costs shall be shared by Licensees as follows: Cowlitz PUD shall fund or cause to be funded Construction Costs in an amount not to exceed $182,000; PacifiCorp shall fund Construction Costs in an amount not to exceed $818,000. In the event total Construction Costs are less than $1 million:

(a) PacifiCorp shall make its portion of the remaining funds available (as Adjusted for Inflation until spent) for needed restoration or maintenance of the Constructed Channel beginning in year

19 after the Issuance of the New License for the Swift No. 1 Project; and **(b)** Cowlitz PUD shall make or cause to be made its portion of the remaining funds available (as Adjusted for Inflation until spent) for needed restoration or maintenance of the Constructed Channel beginning in year 21 after the Issuance of the New License for the Swift No. 2 Project. After PacifiCorp and Cowlitz PUD make such funds available, the funds shall be used for purposes of the Constructed Channel prior to the use of the other Aquatics Funds to support the Constructed Channel. The Licensees shall keep the ACC informed as to the progress of construction and shall notify the ACC within four working days after the Licensees determine that costs are likely to exceed $1 million. If before or after construction begins, the Licensees expect the Construction Costs to exceed $1 million, the Licensees shall inform the ACC and the ACC must decide whether to proceed, consistent with subsection **(c)** below, and draw the additional funds required from the Aquatics Fund or from other supplemental funds as may be available. If the ACC decides to proceed, all costs associated with the Constructed Channel in excess of $1 million, including, but not limited to, construction, operational, and maintenance costs, shall be funded through the use of the Aquatics Fund (Section 7.5). Should the Constructed Channel be built, in no event shall more than $20,000 per year on average be expended from the Aquatics Fund for maintenance of the Constructed Channel. The Parties other than the Licensees may pay such costs from third party funds that may be available to those Parties in lieu of using monies from the Aquatics Fund.

c) Channel Design and Cost Estimate. The Licensees, in Consultation with the ACC, shall complete a design for the construction and maintenance of the Constructed Channel, including the estimated cost of such construction and maintenance, consistent with the findings of the Feasibility Report as soon as practicable after the Effective Date. The design shall include any modifications to the lower Bypass Reach that are required to connect the channel to Yale Reservoir. The Licensees shall provide the ACC with a period of 90 days after receipt of the design from the Licensees to either approve the design or provide comments and suggestions for changes to the design. Following receipt of any comments and suggestions, the Licensees shall review and revise the design for the Constructed Channel and provide the revised design to the ACC for approval. Alternatively, the ACC (other than the Licensees), with the concurrence of the CIT and Yakama Nation, may determine at that time that the Constructed Channel should not be built. If the WDOE requires Licensees to build the Constructed Channel as a condition of the 401 Certifications for either or both of the Swift No. 1 and Swift No. 2 Projects, and if the ACC later decides, with the concurrence of the CIT and the Yakama Nation, that the Constructed Channel should not be built, then at the time of such decision by the ACC, any Party may object to such 401 Certification requirement as being Inconsistent with this Agreement and such Inconsistency shall be resolved in accordance with Section 15 below.
d) Permitting and Construction. The Licensees shall obtain necessary Permits as soon as practicable following design approval by the ACC. The Licensees shall consult with the ACC concerning construction contracts and methods to build the Constructed Channel. The Licensees shall commence and complete construction of the Constructed Channel as soon as practicable after the construction of the Upper Release Point is complete and all required Interests in Land and Permits have been obtained.
e) Maintenance of the Constructed Channel. Licensees shall inspect the Constructed Channel at least once annually to determine whether maintenance may be required. After Consultation with the ACC, and using maintenance funds described in subsection b, above, the Licensees shall perform such maintenance as is determined to be necessary.
f) Flow Releases if Constructed Channel Is Not Constructed. If the Constructed Channel is not constructed pursuant to Section 6.1.3.c, the Licensees shall implement the Annual Release Quantity pursuant to the Combined Flow Schedule provided under Section 6.1.4 below; provided that the Licensees, upon the recommendation of the ACC, may allocate all of the Combined Flow Schedule to the upstream end of the Bypass Reach.

g) Flow Releases During Construction of Channel. During the construction of the Constructed Channel, the Licensees shall suspend discharges from the Canal Drain to facilitate construction activities. Licensees shall salvage fish during the dewatering of the channel, and any third-party cost associated with such efforts will be part of the cost of the Constructed Channel. During construction of the Constructed Channel, discharges from the Upper Release Point will conform to the following schedule, consistent with the conditions described in Section 6.1.5:

(i) July 1 through October 31, 60 cfs.
(ii) November 1 through January 31, 100 cfs.
(iii) February 1 through June 30, 75 cfs.

6.1.4 Interim Flow Schedule; Combined Flow Schedule

a) On or before the date the Constructed Channel and the Upper Release Point are both operational, the Licensees shall, in Consultation with and with the approval of the ACC, design an Interim Combined Flow Schedule that shall (1) allocate the Annual Release Quantity by month for a complete twelve-month period; (2) allocate the monthly quantities between the Upper Release Point and the Canal Drain for a complete twelve-month period, and; (3) provide for flow releases that remain unchanged during any given month, but may vary from month to month subject to the conditions in Section 6.1.5. The Licensees shall implement the Interim Combined Flow Schedule when both the Constructed Channel and the Upper Release Point are operational, continuing until replaced by the Combined Flow Schedule. The Licensees shall, during the following twelve months (the "Adjustment Period"), in Consultation with and with the approval of the ACC, make periodic adjustments to the Interim Combined Flow Schedule based on observation of discharges in the Constructed Channel and related biological considerations. Any such changes will conform to the conditions described in Section 6.1.5 below.

b) During the final months of the Adjustment Period, the Licensees shall, in Consultation with and with the approval of the ACC, based on the experience and observations during the Adjustment Period, design a Combined Flow Schedule that shall (1) allocate the Annual Release Quantity by month; (2) allocate the monthly quantities between the Upper Release Point and the Canal Drain for a complete twelve month period; and (3) provide for flow releases that remain unchanged during any given month, but may vary from month to month, all subject to the conditions in Section 6.1.5. The Licensees shall implement such Combined Flow Schedule on or before the first anniversary of the date that the Constructed Channel and the Upper Release Point are both operational or approval of the ACC, whichever is later. The Combined Flow Schedule shall remain fixed for the duration of each New License, unless altered as described in Section 6.1.4.c below.

c. The Combined Flow Schedule shall remain substantially unchanged during the New Licenses' terms; provided that, in response to significant physical changes in the channel (e.g., due to major spill events) or changes in biological priorities (e.g., species reintroduction or changes in species status), the Licensees, with the approval of the ACC, shall make changes to the Combined Flow Schedule based on clearly articulated biological or ecological justifications; provided further, however, that any such changes shall comply with the conditions in Section 6.1.5. The Licensees shall not be required to revise the Combined Flow Schedule pursuant to this subsection (c) more frequently than once every five years, except in response to a significant physical alteration of the Constructed Channel due to spill events. The Parties other than the Licensees may not require any change to the Combined Flow Schedule in a manner that necessitates physical modification to the Projects or related facilities, including, but not limited to, modification of the Upper Release Point or the Canal Drain, or require additional Permits. The Licensees shall implement the revised Combined Flow Schedule no later than twelve months after the written approval by the ACC of such change.

6.1.5 Conditions on Combined Flow Schedule

a) The Annual Release Quantity as scheduled for a given calendar year shall not constrain the Licensees' ability to spill water at Swift No. 1 and at the Swift No. 2 Canal during high flow events,

for operational reasons, or during emergency circumstances; however, water spilled during such events shall not be charged against the Annual Release Quantity; provided that such spill may be counted to the extent that it displaces scheduled releases from the Upper Release Point, but shall not be counted toward nor displace scheduled releases from the Canal Drain. During the time that spills displace scheduled releases from the Upper Release Point, the Licensees may in their discretion stop releases through the Upper Release Point;

b) No more than a total of 17,078 acre-feet of the Annual Release Quantity (equivalent to an average of 70 cfs for the four-month period) may be scheduled during the period July 1st through October 31st, inclusive, and the maximum Combined Flow Schedule for those months shall not exceed 80 cfs in any month during the period July 1st through October 31st;

c) During the period from November 1st through June 30th, the maximum Combined Flow Schedule in each month shall not exceed 100 cfs;

d) The maximum flow that may be scheduled for release from the Canal Drain to the Constructed Channel shall be the maximum discharge capacity of the Canal Drain, without modification, estimated to be 47 cfs; and

e) No portion of the Annual Release Quantity may be credited to a later year or otherwise carried over from year to year. All of the Annual Release Quantity shall be scheduled for release during each year.

6.1.6 Response to Flow Reductions or Interruptions

The Parties intend that the Combined Flow Schedule, once established, shall be implemented throughout the terms of the New Licenses, without interruption. Certain events may cause the flow to be reduced or interrupted at either the Canal Drain or the Upper Release Point. The Licensees shall deal with such reductions or interruptions in flow as follows:

a) If a non-emergency maintenance or replacement of release point facilities is required, and such activities could decrease or interrupt scheduled releases, the Licensees shall notify the Services, WDFW, and the ACC as far in advance as practicable. The Licensees shall utilize temporary replacement facilities (e.g., pumps, siphons) for the period of potential flow reduction or interruption to maintain release of scheduled amounts of water.

b) If emergency maintenance or replacement of release point facilities is required, or if any other event of Force Majeure occurs, and such activities or such event will decrease or interrupt scheduled releases, the Licensees shall notify the Services, WDFW, and the ACC as soon as practicable. The Licensees shall utilize temporary replacement facilities (e.g., pumps, siphons) for the period of potential flow reduction or interruption to maintain release of scheduled amounts of water to the extent practicable under such emergency or Force Majeure conditions. The Licensees shall take action to maintain or replace the release point facilities and to restore their normal operation as soon as is practicable.

c) On or before the date that the Licensees begin delivering flows from the Upper Release Point under this Section 6.1, the Licensees shall prepare and deliver to the Services, WDFW, and the ACC plans for expeditious installation and operation of temporary replacement facilities for delivery of flows from the Canal Drain and Upper Release Point, respectively, to avoid or minimize reductions or interruptions in flow to the extent practicable under the circumstances described in paragraphs (a) and (b) above.

If under paragraphs (a) and (b) above, discharge is reduced or interrupted at either release point, the Licensees shall document the duration (in days or hours), rate (in cfs), and volume (in acre-feet) of flow reduction to the extent practicable, and shall provide such documentation to the Services, WDFW, and the ACC. 6.1.7 Clean Water Act Certification. WDFW shall support the Annual Release Quantity and Combined Flow Schedule described in this Section 6.1 (with or without the Constructed Channel) by filing supporting comments and recommendations with WDOE. WDFW further agrees that the Annual Release Quantity and Combined Flow Schedule are consistent with WDFW's biological and other

objectives. The Licensees' applications for Clean Water Act certifications may or may not include reference to the Constructed Channel. A decision by the respective Licensees to not include the Constructed Channel in Licensee applications for 401 Certifications shall not discharge Licensee obligations to construct the Constructed Channel in accordance with Section 6.1.3, including the obligation to obtain necessary Permits. All Parties shall support or not oppose the Licensees' applications for Clean Water Act certifications, or the final certificates, relating to flows in the Bypass Reach that are consistent with this Section 6.1.

Exhibit B
Total Dissolved Gas Spill Monitoring Plan
for Swift No 1, Yale, and Merwin Dams

This plan includes:

1. A quality assurance/quality control (QA/QC) plan;
2. A description of how spill events (including 7Q-10 events) will be anticipated;
3. A description of how equipment will be mobilized quickly prior to a spill event and timing of monitoring frequency and duration;
4. Location of monitoring equipment; and,
5. Reporting deadline.

1) Quality Assurance/Quality Control

Data Quality Objectives and Decision Criteria

Total Dissolved Gas meters can exhibit biased results depending on calibration, maintenance and/or field conditions. The Licensee's staff will minimize bias by assuring proper maintenance and care of the TDG meters. Therefore, no Data Quality Objectives (DQOs) are being established.

TDG readings are expected to fall between 100% and 130% saturation. Washington State standard is 110% saturation. Measurement Quality Objectives (MQOs) are equivalent to DQOs and are equal to 1% saturation. MQOs will be met if the TDG meter readings are within 1 percent saturation or 5 mm HG of the expected value based on comparison to paired meters. If MQOs are not met for these pairs, the differences between paired data will be evaluated, including differences in the data quality procedures used, but the data will not be qualified or discarded unless other information indicates problems with the data.

Percent TDG measurements are dependent on barometric pressure readings, so secondary MQOs are also needed for the on-site barometric pressure readings. There are two weather stations at Yale and Swift so it is possible to obtain direct measurements of barometric pressure at those locations. A portable barometer will be employed at Merwin. The target for this monitoring effort will be an MQO of 5 mm HG for the field barometer readings. If the barometric pressure MQOs are exceeded, the data will be considered acceptable if the TDG percent saturation MQOs are met.

Temperature will also be collected during the monitoring periods. Since temperature is of secondary importance, DQOs will not be established but an MQO will be established to determine if data are acceptable for reporting. The MQO for temperature will be met and reported if post-calibration shows that the temperature is within 0.5 ° C.

In terms of data quality the following acceptance criteria shall be applied:

Data Reasonableness: Data will be reviewed to determine if the amount of variability is appropriate, based on expected values and comparison between data sets. Data with too much or reasonably too little variability will not be used.

Data Completeness: Data sets will be used that are reasonably complete during the period of sampling. Incomplete data sets will be used if they are considered representative of conditions during the sampling period.

Data Representation: Data will be used that are representative of the location or time period for sampling. Attention will be paid to the variations in meteorological conditions and to seasonal differences between high and low flow conditions.

Study Design and Field Procedures: All data will be collected using Hydrolab® Model MS5 remote TDG meters. Prior to deployment, instruments will be calibrated to ensure that total pressure (in air) equals barometric pressure. Meters will be attached to a streamside structure such as the Ariel USGS gage house below Merwin and existing cabling, or a large rock or tree below Yale and Swift No. 1. The meters will

be weighted such that they will maintain position in at least 10 feet of water (compensation depth) to prevent air bubble formation on the sensor membranes.

The Hydrolab® Model MS5 remote TDG meters will be checked for calibration before and after each deployment. Meters will be checked for performance at each site at the beginning and the end of each deployment.

Data Review, Quality Assessment, and Validation: Data will be downloaded from the Hydrolab® Model MS5 remote TDG meters to a spreadsheet and reviewed for reasonableness and any values exceeding the MQOs. Outliers will be evaluated for reasons behind any unexpected deviation. Exceedances related to equipment malfunction result in rejection of the data.
Data sets will be considered complete if the data meet the MQOs at least 85 percent of the time. All data meeting MQOs will be accepted. Data will then be evaluated for compliance and acceptance criteria.

2) How spill events will be anticipated including 7Q-10 events

The Licensee will use prediction tools described below to determine when to deploy TDG meters for any anticipated spill event.

The following is a description of how the Licensee will anticipate spill events, including 7Q-10 events, at Merwin Dam, Yale Dam and Swift No. 1 Dam. The Licensee will regularly monitor weather and inflow forecasts from the National Weather Service and River Forecast Center as well as a number of private forecasting vendors. Based on expected inflows and current reservoir elevations, the Licensee will target total Project releases, typically 2 to 3 days in advance, so as to minimize the frequency and magnitude of Project spill. Since the Lewis River Project has a large amount of storage compared to typical inflow, The Licensee is often able to manage and re-regulate natural high flow events so as not to spill at the Projects thereby saving water for such purposes as generation, fishery needs and refill. The Licensee has real time reservoir elevation indication in each of its three reservoirs. With this data, total available Project storage is calculated on an hourly basis and made available to staff involved in Project operations. Reservoir elevations, available storage, and inflow forecasts are routinely monitored by Hydro Control Operators as well as technical water management staff. This information is scrutinized carefully particularly during actual and potential high run off situations.

During the high run off season (November 1 - April 1) the Licensee is required to maintain an aggregate of at least 70,000 AF of storage in the Lewis River reservoirs. If there is a reasonable threat of encroaching on this storage, the Licensee typically spills at Merwin dam as necessary to manage the available flood control storage. The rate at which inflow encroaches on required available storage is updated using existing Project telemetry and inflow forecasts provided by NOAA's National Weather Service River Forecast Center, and/or a third party consultant. Telemetered inflow and reservoir instrumentation currently includes:

- The Licensee and USGS stream gages on the river mainstem and tributaries
- The Licensee Energy lake stage gages
- The Licensee Energy and National Weather Service weather stations
- The Licensee Energy and Natural Resource Conservation Service snow stations

Some spill events are not driven by high flow events, and these are typically planned with enough time to provide ample opportunity for the installation of monitoring equipment. Examples include spilling for required periodic testing of the spill gates as well as meeting some special water management needs, including minimum flow requirements, when the generation units are out of service.

Rainfall is but one factor considered in forecasting inflows. Other factors include air temperature (which will affect whether precipitation falls as rain or snow and at what elevations), wind, soil moisture and snowpack conditions. The Licensee relies on the output of complex weather and streamflow models, typically managed by National Weather Service and third party consultants to assimilate these conditions as well as forecasted weather to predict streamflows, including 7Q-10 events.

3) Deployment, Timing of Monitoring, Frequency, and Duration
The Licensee's staff will have meters and deployment equipment at the ready at all times. A test deployment will take place at each site prior to the high run off season. During the high run off season (November 1 - April 1) staff will be on alert to be prepared to deploy at any time. The MS5 meters will be programmed to record TDG and temperature on an hourly schedule. Meters will be deployed at approximately 24 hours before a spill event and continuing for 48 hours afterward. While the meters will be removed following spill events/periods, the Licensee staff will be ready to deploy equipment as many times as needed to capture each event. Threat of vandalism or theft, and unwillingness to risk data loss drives the decision to remove equipment after each spill event.

4) Location of monitoring equipment
Three meters will be deployed in spill water at the following locations:

- Approximately ¼ mile downstream of Merwin dam near the Ariel gage site;
- Approximately ½ mile downstream of Yale dam and upstream of the confluence with Canyon Creek; and,
- Approximately ½ mile downstream of Swift No. 1 dam.

Placement will be far enough downstream of the dams to be outside the aeration area below each spillway in order to avoid air bubble accumulation on the sensing membrane.

5) Reporting
Summary output of the streamflow forecast models, as well as inflow records, will be included in The Licensee reports identifying and justifying periods of 7Q-10 exemptions identified in section 4.3.5 f. Likewise when Federal Energy Regulatory Commission license conditions or other safety and environmental requirements require spill not otherwise explicitly included in 7Q-10 exemptions, The Licensee will document and report those events, including the basis of the operation. As called for in the Lewis River Settlement Agreement (Section 14.2.6), annual reporting of spill events and data analysis will be included in joint Licensee's Annual Aquatics Coordination Committee Report.

Exhibit C
Definitions

7Q-10	The high flow that is calculated to occur only once, for 7 consecutive days during any 10-year period.
ACC	Aquatic Coordination Committee
BMPs	Best Management Practices to reduce pollution
CWQPP	Construction Water Quality Protection Plan – necessary for all construction projects in, over, or near water.
FERC	Federal Energy Regulatory Commission
FWPCA	Federal Water Pollution Control Act
HPA	Hydraulic Project Approval
IWPP	In Water Work Protection Plan. Part of the CWQPP as described above. This is for work in the water—such as boat ramps or cement work in the water. This does not apply inside the dam when before beginning the project, the water can be completely removed.
MSL	Mean Sea Level
NPDES	National Pollution Discharge Elimination System.
NTU	Nephelometric Turbidity Units
Pesticide	a) Any substance or mixture of substances intended to prevent, destroy, control, repel, or mitigate any insect, rodent, snail, slug, fungus, weed, and any other form of plant or animal life or virus, except virus on or in a living person or other animal which is normally considered to be a pest or which the director may declare to be a pest; b) Any substance or mixture of substances intended to be used as a plant regulator, defoliant or desiccant; and c) Any spray adjuvant, such as a wetting agent, spreading agent, deposit builder, adhesive, emulsifying agent, deflocculating agent, water modifier, or similar agent with or without toxic properties of its own intended to be used with any pesticide as an aid to the application or effect thereof, and sold in a package or container separate from that of the pesticide with which it is to be used.
RCW	Revised Code of Washington
RM	River Mile
SWPPP	Stormwater Pollution Prevention Plan –Part of the CWQPP as described above This is to prevent polluted stormwater from entering the reservoir or river.
TDG	Total Dissolved Gas
TMDL	Total Maximum Daily Load
TWQAP	Temperature Water Quality Attainment Plan
USC	United States Code
USDA-FS	Forest Service of the United States Department of Agriculture
USGS	United Stated Geological Survey
USFWS	United States Fish and Wildlife Service
WAC	Washington Administration Code
WQAP	Water Quality

WQMP	Water Quality Monitoring Plan
WDFW	Washington Department of Fish and Wildlife
WQS	Water Quality Standards Rule, WAC 173 201A. For further descriptions of terms, refer to the definitions in this rule