



PUBLIC UTILITY DISTRICT NO. 1 of CHELAN COUNTY

P.O. Box 1231, Wenatchee, WA 98807-1231 • 327 N. Wenatchee Ave., Wenatchee, WA 98801
(509) 663-8121 • Toll free 1-888-663-8121 • www.chelanpud.org

May 18, 2011

VIA ELECTRONIC FILING

Honorable Kimberly D. Bose, Secretary
Nathaniel J. Davis, Sr., Deputy Secretary
FEDERAL ENERGY REGULATORY COMMISSION
888 First Street, NE
Washington, DC 20426

RE: Lake Chelan Hydroelectric Project No. 637 (Project)
Report on Minimum Flow and Ramping Rate Deviation for Chelan River

Dear Secretary Bose and Deputy Secretary Davis:

This letter is to provide you with Public Utility District No. 1 of Chelan County's (Chelan PUD) follow-up report on an instream flow and ramping rate deviation that occurred during the afternoon of April 18 on the Chelan River. This deviation was first reported by email to the Federal Energy Regulatory Commission (FERC) Portland Office and Washington Department of Ecology (Ecology) Central Regional Office on April 20, 2011.

Summary

When project operations shifted minimum spawning period flows in Reach 4 of the Chelan River from the Pump Station to the Low Level Outlet, it resulted in a brief deviation from minimum flow and ramping rate requirements. The deviation occurred due to a previously undetected problem with control system logic that caused a Low Level Outlet gate to begin closing rather than opening a second gate, which was the expected outcome of the Project Operator's command. The Project Operator notified maintenance personnel, who were working near the Low Level Outlet, of the problem and directed them in procedures to manually override the control system and restore the required flows. The override was initiated within nine minutes of the beginning of the problem. The effects of the Low Level Outlet gate closure resulted in water levels decreasing approximately nine inches in Reach 4 over a period of approximately 35 minutes, exceeding the two inches per hour maximum ramping rate. Flows to Reach 4 were below the minimum 320 cfs, as estimated from water level measurements, for approximately 40 minutes. There was about a one hour time lag between the timing of the flow effects at the Low Level Outlet and the water level changes at Reach 4.

Minimum flow and ramping rate deviations in the upper reaches (Reaches 1-3) of the Chelan River also resulted from this incident. The Low Level Outlet flows were below the required minimum flow of 80 cfs for a period of nine minutes and water level decreases also likely exceeded the two inches per hour ramping rate. There are no water level monitoring instruments in Reaches 1-3 to record actual water level decreases resulting from this event.

No adverse biological effects were observed to result from this event. Visual observations using security cameras determined that pools in Reach 1 below the Low Level Outlet were not dewatered during the incident. No fish stranding or mortality was observed in Reach 4 either during the event or noted during surveys conducted the next day.

License Requirement

Article 405 requires Chelan PUD to implement the instream flows, ramping rates, and tailrace flows as set forth in Article 7 of the Lake Chelan Settlement Agreement and Chapter 7 of the Comprehensive Plan attached to the settlement agreement. The specific flow requirement that is the subject of this deviation report is to maintain a minimum flow of 320 cfs into Reach 4 of the Chelan River for steelhead trout spawning from March 15 – May 15 and to maintain minimum flows of 80 cfs in Reaches 1-3 during the same time period. Chelan PUD has the option of providing the 320 cfs minimum flows to Reach 4 by using the Pump Station to supplement the 80 cfs minimum flow coming from Reaches 1-3 or to provide all or a greater proportion of the 320 cfs flow from the Low Level Outlet.

In accordance with FERC's Order Modifying and Approving Operations Compliance and Monitoring Plan, Article 405, issued November 30, 2007, when a flow deviation occurs, Chelan PUD is required to notify FERC and Ecology of the deviation within 48 hours of the time that Chelan PUD became aware of the deviation. FERC and Ecology were notified via electronic submittal on April 20, 2011. Following the initial notification, Chelan PUD is required to file a report, as follows:

“The licensee shall file a report with the Commission within 30 days of any deviation from minimum flow requirements, lake levels or ramping rates. The report shall, to the extent possible, identify the cause, severity, and duration of the incident, and any observed or reported adverse environmental impacts resulting from the incident. The report shall also include: 1) operational data necessary to determine compliance with the respective license requirements regarding minimum flows, lake levels, and ramping rates, as appropriate; 2) a description of any corrective measures implemented at the time of occurrence and the measures implemented or proposed to ensure that similar incidents do not recur; and 3) comments or correspondence, if any, received from the resource agencies and others regarding the incident.”

Record of Chelan River Flows into Reach 4

Spawning flows of 320 cfs minimum have been in effect in the Reach 4 Habitat Channel since March 15, 2011. Prior to April 18, these flows were being provided using a combination of 80 cfs from the Low Level Outlet and at least 240 cfs from the tailrace pumping station. Due to high accumulations of snowpack during March and April, the runoff forecast for the Lake Chelan Basin increased substantially and the District decided to provide all the spawning flows from the Low Level Outlet rather than operating the pumping station. Flows of at least 320 cfs have been provided to Reach 4 from the Low Level Outlet since April 18, 2011.

Cause of the Deviation

The deviation occurred during the afternoon of April 18, when a control system logic problem briefly closed the Low Level Outlet gate that was providing flows to the Chelan River. This event took place during the final stages of the operation to shift provision of minimum spawning flow levels to the Low Level Outlet. The Project Operator had increased the set point for Low Level Outlet flows from 80 cfs to 330 cfs but the control program had only opened one of the two slide gates and flows were somewhat less than the set point with the one gate at full open. The Project Operator entered an additional command intended to force the control program to open the second slide gate to obtain the additional flow. The control program instead began closing the slide gate that was open rather than opening the second gate. The project operator then contacted personnel near the site of the Low Level Outlet, who were able to open the control panel at the Low Level Outlet and use manual override to reopen the gate that was closing.

The event began at about 1407 hours with Low Level Outlet flows at 320 cfs. Manual override was engaged at 1416 hours, reversing the closing of the first slide gate. Manual opening of the second slide gate began about 1422. Flow from the Low Level Outlet changed from 320.8 cfs at 1408 to a low of 13.3 cfs at 1418, then began increasing with flow reaching 322.2 cfs at 1432. Low Level Outlet flows were stabilized and have been maintained at between 330-340 cfs since this event.

Biological and/or Environmental Impacts:

There were no adverse biological or environmental impacts observed to have resulted from this incident. Visual observations using security cameras determined that pool areas in Reach 1 below the Low Level Outlet were not dewatered during the incident. Flow from the Low Level Outlet was never completely stopped, thus the potential effect was limited to water level decreases exceeding the ramping rate limits of two inches per hour. This even occurred shortly after 2:00 PM, when fish species would typically be alert and able to move into deeper water ahead of shoreline dewatering. At present, there have not been any observations of juvenile fish occurring in Reach 1, where the dewatering of shoreline and riffle areas would have been most pronounced. In Reach 4, only a few Chinook salmon fry were observed the following day in shoreline areas.

These observations were the first Chinook fry observed in 2011 during weekly surveys that had been occurring since March 16. The rapid recovery of flows and water levels following manual repositioning of the Low Level Outlet gates prevented the desiccation of shoreline substrates, thus it is unlikely that non-motile benthic organisms or other aquatic life would have been adversely affected by this incident.

Corrective Measures

The Low Level Outlet has been maintained on manual override since the April 18, 2011, incident. The manual control box is tagged with a "Caution" tag providing instructions to keep the gates on manual control, operate locally only. The Project Operator adjusts the gates as needed in response to changes in the forebay elevation at the Project Dam. These gates will remain on manual control until the automated control system can be reprogrammed and tested. This is scheduled to occur once the Lake Chelan refill has progressed to the point that spill from the Project Dam has been initiated. Once the spillway at the Project Dam is providing flows, reprogramming and testing of the Low Level Outlet automated controls can be done without risk of minimum flow or ramping rate deviations resulting from testing the system.

Conclusion

The April 18, 2011, deviation from Chelan River minimum flows and ramping rates was caused by a problem with the automated control system logic. The brief nature of the water level decline and rapid restoration of flows likely prevented any adverse effects on aquatic life. Minimum flow and ramping rate requirements have been maintained since the incident by removing the Low Level Outlet from automated control and tagging the manual control box with a "Caution" tag. The Low Level Outlet automated control system will be reprogrammed and tested after minimum flows can be maintained by use of the spillgates at the Project Dam.

If you have any questions regarding this event, please contact me or Steven Hays at (509) 661-4181.

Sincerely,



Michelle Smith,
Licensing & Compliance Manager
(509) 661-4180
michelle.smith@chelanpud.org

Enclosure: E-mail correspondence with the agencies

cc: Washington Department of Ecology
Chelan River Fishery Forum

Sokolowski, Rosana

From: Hays, Steve
Sent: Wednesday, April 20, 2011 6:20 PM
To: 'patrick.regan@ferc.gov'; 'erich.gaedeke@ferc.gov'; 'pirl461@ecy.wa.gov'; 'Charlie McKinney (cmck461@ECY.WA.GOV)'
Cc: Smith, Michelle; Sokolowski, Rosana; Truscott, Keith; Osborn, Jeff
Subject: Lake Chelan Project No. 637 Minimum Flow and Ramping Rate Deviation

This email is to provide you notification regarding a minimum flow and ramping rate deviation, which occurred in the Chelan River near Chelan Falls. A detailed report will be filed within 30 days.

Spawning flows of 320 cfs minimum have been in effect in the Reach 4 Habitat Channel since March 15. These flows were being provided using a combination of 80 cfs from the Low Level Outlet and at least 240 cfs from the tailrace pumping station. Due to high accumulations of snowpack during March and April, the runoff forecast for the Lake Chelan Basin increased substantially and the District decided to provide all the spawning flows from the Low Level Outlet rather than operating the pumping station.

The deviation occurred during the afternoon of April 18, when a control system logic problem briefly closed the Low Level Outlet gate that was providing flows to the Chelan River. This event took place during the final stages of the operation to shift provision of minimum spawning flow levels to the Low Level Outlet. The project operator had increased the set point for Low Level Outlet flows from 80 cfs to 330 cfs but the control program had only opened one of the two slide gates and flows were somewhat less than the set point with the one gate at full open. The project operator entered an additional command intended to force the control program to open the second slide gate to obtain the additional flow. The control program instead began closing the slide gate that was open rather than opening the second gate. The project operator then contacted personnel near the site of the Low Level Outlet, who were able to open the control panel at the Low Level Outlet and use manual override to reopen the gate that was closing.

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The water levels in the Reach 4 Habitat Channel dropped approximately 9 inches over a 35 minute period, then regained the previous water level within 20 minutes from the low point. No fish stranding or mortality was observed to have occurred as a result of this event. During a survey the following day, there were only a few Chinook salmon fry observed in the shoreline areas and these were the first Chinook observed since weekly spawning surveys began on March 16. Cold water temperatures, which have been prevalent this year, typically cause Chinook fry to hide in the river bed during the daytime thus there were probably few Chinook fry in areas that would have been dewatered during this brief event.

If you have any questions or require additional information, please contact Steven Hays at (509)661-4181.

Thank you

Steven Hays

Fish and Wildlife Senior Advisor
steve.hays@chelanpud.org
(509) 661-4181