



**PUBLIC UTILITY DISTRICT NO. 1 *of* CHELAN COUNTY**

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July 15, 2009

P-637-WA

NATDAM-WA00004

Mr. Patrick Regan, P.E., Regional Engineer  
Portland Regional Office  
Federal Energy Regulatory Commission  
805 SW Broadway, Suite 550  
Portland, OR 97205

Re: Chelan River Project Monthly Report

Dear Mr. Regan:

In accordance with your letter of June 19, 2008, enclosed herewith are an original and two copies of the thirteenth monthly report for the Chelan River Project. In addition, copies of this letter and the report will be sent to Mr. Jon Merz and Ms. Pat Irle of Washington Department of Ecology.

If you would like to discuss this work or if additional information would be helpful, please call me at the number listed below, or call Michelle Smith, Licensing & Compliance Manager, at (509) 661-4180.

Sincerely,  
Engineering Services

M. Gene Yow, P.E.  
Dam Safety Manager  
(509) 661-4305  
[gene.yow@chelanpud.org](mailto:gene.yow@chelanpud.org)

Enclosures: Original and two copies

cc: Jon Merz, WaDOE  
Pat Irle, WaDOE

Chelan River Project – Monthly Report  
Lake Chelan Hydroelectric Project – FERC No. 637  
Public Utility District No. 1 of Chelan County

July 15<sup>th</sup>, 2009

**1. Progress of Work**

The work is on schedule and in conformance with the plans, specifications, and permits. No environmental incidents have occurred. No safety incidents have occurred.

Work on the new habitat channel, pump station, and conveyance canal (including the outlet structure), is actively progressing. The hydraulic control structure (boulder weir) was completed on schedule. The habitat channel is complete except for plantings.

Work at Lake Chelan Dam for the Low Level Outlet is ongoing. The outlet structure is complete. LLO piping installation is complete. Electrical work remains.

Progress on the site includes:

- The hydraulic control structure is complete.
- Reach 4 spill channel is complete.
- The conveyance canal is 98% complete. Remaining work includes installation of the afterbay drain valve and finishing the low-flow channel.
- Conveyance canal outlet structure is complete.
- All of the boulders are now in place in Reach 4.
- Pump station concrete placements are complete.
- The pump tubes have been set, and the supports grouted into the drilled pier casings.
- Electrical work at the pump station is complete. Pumps have been installed.
- Air burst piping is complete.
- The two pump station transformers are set and powered up.
- Habitat channel is complete.

## **2. Status of Construction**

The lower tailrace habitat work began July 1, 2008, on schedule, and is complete.

Canal outlet structure concrete construction is complete, on schedule, and slide gates and diffusion gratings are in place. Installation of miscellaneous metals (e.g. walkway grating) is complete.

Pump station work is complete, on schedule. The control buildings are set, transformers are set, and conductor installation is complete. The retaining wall handrail has been installed as well as the junction boxes. The 42" diameter discharge pipes have been installed, and the afterbay concrete is complete.

Work at the Low Level Outlet is complete, with the exception of the electrical work. The 60" gate valves and sluice gates have been set.

The 84" LLO piping placement is complete. The 60" piping has been installed. Concrete placement for the bulkhead is complete.

All remaining phases of the work are expected to start on schedule.

See project milestone schedule which follows.

Activity Name	Original Duration	Start	Finish	Duration % Complete
<b>LC07b Chelan River Project</b>	<b>1014</b>	<b>11-Dec-06 A</b>	<b>02-Nov-10</b>	<b>67%</b>
<b>Planning</b>	698	28-Feb-07 A	30-Nov-09	86.25%
<b>Tree Relo &amp; Boulder Process (Mostly 08-SW04)</b>	89	20-Mar-08 A	18-Jul-08 A	100%
<b>Entrance Road Modifications</b>	133	05-Mar-08 A	14-Aug-08 A	100%
<b>Execution (Construction of 08-01)</b>	744	11-Dec-06 A	14-Oct-09	91.26%
<b>Pre-Construction Activities</b>	51	12-May-08 A	02-Jun-08 A	100%
<b>Pump Station Construction</b>	715	11-Dec-06 A	02-Sep-09	94.97%
<b>Reach 4 Construction</b>	333	02-Jun-08 A	14-Oct-09	80.45%
<b>Low Level Outlet Construction</b>	473	01-Oct-07 A	06-Aug-09	96.41%
<b>Revegetated Areas</b>	257	03-Nov-09	02-Nov-10	0%
<b>Closeout</b>	30	04-Jun-09 A	09-Nov-09	40.34%
<b>Testing</b>	24	04-Jun-09 A	30-Oct-09	50%
<b>Project Turnover</b>	2	30-Oct-09	03-Nov-09	0%
<b>Closeout</b>	5	03-Nov-09	09-Nov-09	0%

### 3. **Construction Difficulties**

No unusual/extraordinary difficulties have been encountered thus far on the project.

### 4. **Contract Status**

Goodfellow Brothers, Inc. (GBI) of Wenatchee, WA, is the general contractor and is performing the majority of the work themselves. Subcontracted work includes:

Malcolm Drilling of Kent, WA, a specialty foundation contractor, installed the foundation piers to support the pump tubes and pumps.

Sharples Construction of Kent, WA built the concrete outlet structure for the conveyance canal. They also constructed the retaining wall for the pump station, including the footing slab and grade beams.

McCandlish Electric, Wenatchee, WA is performing the electrical work.

Harbor Offshore, Ventura, CA, performed the diving work for installation of the tee screens and pump tubes.

Lampson International, Kennewick, WA, supplied the cranes and riggers for installation of the pump tube assemblies.

DDJ Construction Welding, Inc., Enumclaw, WA, performed the demolition work on the sheet pile wall and bulkhead at the 17-foot penstock at Chelan Dam. They are also welding the pipe sections of the LLO piping.

The work is on schedule, and is anticipated to remain on schedule through completion of the work.

### 5. **Critical Events and Dates**

#### **2008**

- May 5 Notice to Proceed
- May 12 Begin Mobilization
- May 27 Begin work on site
- June 5 Set temporary bridge across Reach 4 spill channel
- June 5 Lake Chelan spill begins
- July 1 In-water construction work window begins
- July 15 Delivery of pump station pumps
- August 7 Delivery of T-Screens

- September 2 Delivery of pump tubes
- September 5 Completion of Tailrace Habitat construction
- November 17 Completion of Hydraulic Control Structure
- December 5 Begin work at Chelan Dam for the Low Level Outlet
- December 12 Completion of Canal Outlet Structure Concrete

### **2009**

- January 29 Completed setting pump tubes and grouting
- March 9 Begin tunnel stub work at Chelan Dam
- March 11 Set the two power transformers for the pump buildings
- March 17 Set the control buildings upon their foundations
- March 25 Set the 42" diameter discharge pipes at the pump station
- April 30 Powered up the transformers and control buildings
- May 1 Installed the 60" gate valves and sluice gates at the LLO
- May 28 Final inspection of LLO wet tunnel and piping
- June 2 Bump tested the pump station pumps
- June 3 Completed concrete placements for the afterbay
- June 3 Verified operation of outlet structure slide gates
- June 8 Installed sluice gate actuators at LLO

## **6. Reservoir Filling**

N/A

## **7. Foundations**

Drilling for pump station foundation piers did not encounter bedrock in any of the pier locations. This possibility was anticipated in the design so that an appropriate length for piers not reaching bedrock was calculated and shown on the design drawings. This length was used, as planned.

The foundation excavation for the conveyance canal outlet structure has been completed. The foundation material consists of alluvial boulders and cobbles in a matrix of gravel and sand. These are the conditions anticipated by the design.

The foundation excavation for the low level outlet has been completed. The foundation material consists of alluvial sand and gravel, with some cobbles and boulders. These are the conditions anticipated by the design.

## **8. Sources of Major Construction Materials**

Material for “fish mix” and “riffle mix”, two gradations of gravel used to construct the fish habitat, was obtained from on-site sources. See drawing 0330-50GA-0028 (sheet R1) in the bid documents for borrow area locations. The material was regularly tested, inspected, and met the contract specifications.

Boulders were obtained from both on-site and off-site sources. The boulders are generally from alluvial sources along the Columbia River Valley.

The required Large Woody Debris (LWD) was delivered to the job site from various sources along the Columbia River Valley. The LWD includes 154 poplar trees for racking, 65 root balls, 85 conifer key logs, and approximately 100 conifer racking logs.

The concrete supplier is Chelan Concrete. The cement supplier is Lehigh Cement.

Gates and valves for the Low-Level Outlet are from J&S Valve and HydroGate. The equipment is on-site and installed.

Pumping equipment and controls are being provided under separate contract by ITT Flygt, Inc. The pumps and major components have been delivered to the job site, on schedule.

## **9. Materials Testing and Results**

Structural concrete has been placed and tested, and structural fill material for which density tests are required has been placed. Test results meet the contract specifications. Canal shotcrete lining has been placed, and tested to verify conformance with the contract specifications. No exceptions have been noted.

## **10. Instrumentation**

Instruments that have been installed so far include the following:

- Temperature sensor at Pump No. 1, TT-141, at the northern-most pump, near the T-screen
- Differential pressure bubbler line, ¼-inch copper line, sensing point is the bottom elevation of the T-screen for pump No. 3.
- Level switch LSH-151 has been installed in the main transformer’s vault
- Level switch LSH-152 has been installed in the auxiliary transformer’s vault
- Temperature sensor at the pumped water outlet structure, TT-142

- Level sensors LS-131-1 and LS-131-2 have been installed at the pumped water outlet structure, on either side of the northern-most slide gate.
- The pumped water conveyance canal velocity meter (Doppler unit) has been installed.

## 11. Photographs



This is a picture of the head end of the habitat channel, taken on July 13<sup>th</sup>, 2009. Spill is being released from Chelan Dam. Approximately 1200 cfs is running through the gorge into Reach 4. The entrance log jam is shown along with the conveyance canal and outlet structure. All large woody debris structures and rock features are in place. The riparian strip, made up of topsoil and fabric, is noticeable along the edges of the habitat channel. Plantings will be installed during the 2009 dormancy period, this fall.





The air relief pipes are being installed on the 42" diameter discharge pipes at the pump station. Picture was taken on July 9<sup>th</sup>, 2009.



This is the completed outlet structure at the Low Level Outlet. Picture taken on July 14<sup>th</sup>, 2009.

## **12. Erosion Control and Other Environmental Measures**

All work has been performed in accordance with the project's approved Water Quality Protection Plan and Erosion & Sediment Control Plan. This includes placement of silt fences and sediment curtains, and deployment of an oil boom. Washington Department of Ecology staff has visited the project site on several occasions. No water quality violations have occurred.

A sediment curtain was installed in the powerhouse tailrace channel around the temporary earth berm at the pump station, prior to placement of the berm. The sediment curtain, along with an oil boom, remained in place during drilling for pier installation. The steps taken have been effective at limiting sedimentation to permitted levels. The equipment has been removed since the temporary earth berm used for concrete pier construction staging has been removed.

The oil boom that was installed downstream of the confluence of the Chelan powerhouse tailrace channel and the new channel, has been removed. Work is underway above elevation 710 in the habitat channel, and surface water is protected by a temporary berm which separates work from nearby water.

### **13. Other Items of Interest**

Spill from Lake Chelan, to control the lake level, began on June 8 with a flow of 240 cfs. Spill was increased, and discharged at rates up to 5000 cfs. At this time, spill releases from the dam are expected to continue until early August. The pump station will not normally be operated during periods of flow greater than 320 cfs, so commissioning will not be performed under this flow regime. Instead, commissioning of the pump station will be rescheduled for August, 2009, after the end of spill to control lake level. Commissioning of the low level outlet is scheduled for early August, 2009.

No injuries or safety incidents have occurred.