

Condit Hydroelectric Project Decommissioning

FERC Project No. 2342

WOODY DEBRIS ANNUAL MONITORING REPORT 2013



Prepared by:



Prepared for:



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Woody Debris Annual Monitoring Report – 2013

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1.0 Introduction

1.1 Project Description

PacifiCorp Energy owns and operated the Condit Hydroelectric Project, which was completed in 1913 on the White Salmon River in Skamania County and Klickitat County, Washington. In 1991, PacifiCorp Energy filed an application with the Federal Energy Regulatory Commission (FERC) for a new license authorizing the continued operation and maintenance of the project. In evaluation of the FERC recommendations contained within the Final Environmental Impact Statement, PacifiCorp determined that the mandatory conditions would render the project uneconomic to operate. After consultation with project stakeholders, the Condit Settlement Agreement was signed by PacifiCorp Energy and project stakeholders to resolve all issues in the proceeding for relicensing the project. The outcome was to decommission the project. Accordingly, the Condit Hydroelectric Project has been removed as outlined in the Project Removal Design Report dated March 15, 2011; twelve supporting management plans; the Washington Department of Ecology 401 Certification; the US Army Corps of Engineers 404 Permit; and the FERC Surrender Order.

To address woody debris issues that might be encountered in the decommissioning process, a specific management plan was developed (Woody Debris Management Plan, PacifiCorp Energy, 2011). This plan identified general goals and procedures for: 1) monitoring the river for the presence of woody debris and debris jams prior to the dam breach event; 2) monitoring the movement and deposition of woody debris and the formation of debris jams after the breach event; 3) removal of woody debris jams that create an impediment to fish migration or that create a significant hazard to public (boating) safety; and, 4) the construction of new woody debris structures in the margins of the river in locations where such structures would be beneficial for fish habitat and where such structures could feasibly be built. This Annual Woody Debris Monitoring Report addresses each of these topics in the context of post-dam removal conditions observed since the fall of 2012.

1.2 Regulatory Requirements

The FERC issued the Order Accepting Surrender of License, Authorizing Removal of Project Facilities, and Dismissing Application for New License (FERC, December 16, 2010 (FERC December 2010 SO)); followed by the Order on Rehearing, Denying Stay, and Dismissing Extension of Time Request (FERC, 2011a) under which the decommissioning project has been conducted. In addition, the FERC issued the Order Modifying and Approving Woody Debris Management Plan (FERC, 2011b) in response to submittal of the Woody Debris Management Plan for the project. No logjam removal activities may take place until consultation with the Washington Department of Ecology (Ecology), Washington Department of Fish and Wildlife, the National Marine Fisheries Service, and Klickitat County has been completed. The FERC Order modifying and approving the woody debris management plan requires PacifiCorp Energy to submit an annual woody debris monitoring report by December 31 of each year.

The project is also a requirement of the Washington Department of Ecology Section 401 Water Quality Certification Order No. 8049 of October 12, 2010. The 401 certification establishes an "*Interim Limit*" to manage and monitor woody debris and calls for PacifiCorp to: 1) remove large woody debris from the reservoir for offsite disposal and/or use for approved habitat enhancement projects; and, 3) conduct surveys in the White Salmon River canyon downstream of the dam to identify and dislodge woody debris that may be hindering fish passage or present a threat to public safety. No woody debris jam removal activities may take place until consultation with the Washington Department of Ecology, Washington Department of Fish and Wildlife and the National Marine Fisheries Service has been completed. The 401 certification also requires an annual monitoring report which is due by December 31 of each year.

A Section 404 permit was issued for this project (US Department of the Army, 2011). The 404 permit requires that the applicant (PacifiCorp Energy) implement the Woody Debris Management Plan as approved by the FERC.

2.0 Monitoring of Woody Debris Accumulations

Calendar year 2013 constituted the fourth and final stage of woody debris monitoring as described in the Woody Debris Management Plan (PacifiCorp, 2011). The management plan anticipated the possibility that erosion of larger-sized soil materials at the upper end of the reservoir area could be ongoing during stage four and that any erosion could release woody debris to the river. However, the coarse sand, gravel and cobble materials that had accumulated in this area during operation of the hydroelectric project were mobilizing downstream at a significant rate by late-2011. During 2013, the upper end of the reservoir area was not observed to be a source of woody debris released to the river. Following seeding of the graded areas in the fall of 2012 and planting of trees in 2013, the former reservoir area has been stable through the course of the year.

2.1 Reservoir Reach

The reservoir reach of the White Salmon River begins in the vicinity of the confluence of Buck Creek with the river, which was approximately the upstream limit of the reservoir, and extends to the former dam site. During 2013, there were no bank failures or observed erosion that resulted in woody debris being mobilized. Mostly scattered, transient pieces of wood have been deposited on the banks of the river in the reservoir reach, especially following periods of higher flow. At a few points there are small accumulations of woody debris, but no naturally formed woody debris jams were observed. The lack of natural wood accumulation is consistent with the form of the river that emerged as the reservoir sediments were washed away: a moderately steep and incised river channel, with few alluvial floodplain deposition zones.

2.2 Canyon Reach

The canyon reach of the White Salmon River begins at the former dam site and extends down to the backwater area just upstream of the confluence with the Columbia River. This reach of the river is also moderately steep and incised, with few alluvial floodplain deposition zones. A river constriction referred to as "The Narrows" due to the relatively close spacing of the steep canyon walls, has been a site where river-spanning logjams have been known to occur. As previously reported, a significant woody debris jam that formed at The Narrows in the months following the breach of the dam was removed in October 2012. After one year, the location remains free-flowing with no fish passage restriction or boating hazards.



The Narrows remains clear for boater passage. November, 2013.

Also as previously reported, downstream of the U.S. Fish and Wildlife Service facility at the Big White Salmon Ponds, a pile of woody debris has accumulated on river left at a location where the river channel widens and a bedrock outcrop controls the channel bed form. The volume of this woody debris pile does not appear to have changed in size and the depositional form still does not show any anchoring to the channel bed or river banks. As noted, this woody debris may re-mobilize during a high flow event.



Woody debris downstream of Big White Salmon Ponds.

2.3 White Salmon River Embayment

The White Salmon River just upstream of the confluence with the Columbia River is the first significant sediment deposition zone downstream of the Condit dam site. It is also an area subject to backwater inundation per operations of Bonneville dam on the Columbia River. Many logs remain scattered throughout this embayment area. The woody debris observed in the embayment area consists of isolated pieces: no real logjams have formed. Because the gradient of the river flattens in this short reach, and because the width of the active channel can vary greatly with changes in flow, there are quite a few transient logs observed in this reach, especially on the large sediment deposit on river right. These logs will likely mobilize out into the Columbia River during higher river flows.

3.0 Removal of Woody Debris Jams

3.1 Reservoir Reach and Dam Site

Woody debris has continued to be transported into the reservoir reach from the upstream watershed. All of this woody debris has behaved in a transient manner, moving when mobilized by the river flow, but never accumulating into an organized debris jam. At the former dam site, floating woody debris passes freely to the canyon reach. In 2013, no wood was observed to be a hazard to public safety or to create a fish passage problem. No removal activity was initiated, nor was any removal needed.

3.2 Canyon Reach

PacifiCorp Energy and the local boating community recognize that The Narrows location will remain a potential site for naturally occurring logjams and there is an active informal communications network among the community that spreads the word on conditions. These

communications have indicated that there have been some independent efforts to dislodge woody debris from the canyon reach. Surveys of the area by project personnel have noted signs of removal activities. Any independent actions were taken with neither PacifiCorp Energy involvement nor prior knowledge.

3.3 White Salmon River Embayment

Removal of woody debris from the White Salmon River embayment area did not occur in 2013 and is not expected to be needed. Transient pieces of wood have aggregated together from time to time in the embayment and on the sandbars in the Columbia River at the mouth of the White Salmon River. However, no wood was observed to be a hazard to public safety or to create a fish passage problem.

4.0 Constructed Woody Debris Structures

4.1 Engineered Log Jam Structures within the Former Reservoir Area

As part of decommissioning efforts, seven Engineered Log Jams (ELJs) were constructed within the reservoir reach in the locations shown on the drawing included at Appendix A. In the original Woody Debris Management Plan, the construction of ELJs was anticipated as a means to improve fish habitat, but after observing conditions once the reservoir sediments had eroded down to the old river bed profile, the ELJs were pursued primarily to enhance the establishment of riparian vegetation on low benches next to the river.



Engineered Log Jams constructed on the banks of the White Salmon River within the former reservoir area – December 2013.

4.2 Monitoring ELJ Structures

4.2.1 Structure No. 1, Upstream End of Location 2 – ELJ 1 has promoted the establishment of both planted and volunteer riparian vegetation. The location and river dynamics during high flows have encouraged the deposition of additional woody debris just upstream of the structure. Slight undercutting was observed, but is not considered problematic. The structure remains intact with logs firmly anchored with no visible boater hazard present.

4.2.2 Structure No. 2, Downstream End of Location 3 - ELJ 2 remains intact and stable. Its position creates a small eddy which serves as a refuge for fish or boaters to rest. The bank below contains emergent riparian vegetation which should establish well in this small eddy. No hazard to boaters is present.

4.2.3 Structure No. 3, Location 3, Near Mill Creek - The removal of logs from Mill Creek that had been placed as grade control led to down cutting of the creek, but did not affect the integrity of ELJ 3. The riparian vegetation immediately downstream of the ELJ is becoming established and the structure is being colonized by native plant species in the available soil. Cable, hardware, and anchors all appear to be stable and sound.

4.2.4 Structure No. 4, Location 4, Next to the Unnamed Tributary Stream The location on the inside of a bend opposite a vertical rock wall could encourage more material to deposit naturally during high water events, but little material has been deposited so far. This structure protrudes a little more into the river channel than the other ELJs, but does not impede boater traffic or present a hazard. This protrusion causes an eddy behind it that provides an area of refuge for fish and boaters to rest out of the main current. This eddy also promotes stability of the bank for riparian vegetation to propagate in this zone. The adjacent unnamed tributary is very small and would not likely transport woody debris of any size, but it has brought small material down into the structure. One log on the downstream side of the structure has shifted further downstream and mostly separated from the ELJ. This submerged log is located in the pool behind the ELJ and does not present a hazard to boating. Overall, the ELJ is stable and intact.



Engineered Log Jam No. 4 on the banks of the White Salmon River – December 2013

4.2.5 Structure No. 5, Location 5, At the Downstream End ELJ 5 is well buried into the bank, giving the impression that this is a small structure. Though it protrudes only slightly into the river, it likely influences the transport behavior of the woody debris headed downstream by encouraging the material towards ELJ 4 on the opposite bank. Riparian vegetation is colonizing below ELJ 5 and is helping to stabilize the small stream entrance into the river channel. The soil cover on most of the ELJ is intact and stable, as is the small visible portion of the ELJ.

4.2.6 Structure No. 6, Location 5, Just Upstream from Structure No. 5 ELJ 6 also likely influences the transport direction of woody debris going downstream by forcing the material towards the opposite bank. Colonizing riparian vegetation is thriving in this location between the two structures. Some small woody debris has accumulated on the upstream portion of the structure. The overhanging nature of this structure and a small amount of undercut has provided some shaded fish habitat. Cable, hardware, and visible anchoring all appear sound and stable.

4.2.7 Structure No. 7, Location 5, Center Section ELJ 7, the uppermost structure, provides additional stability to the right river bank. The ELJ has led to a small cove that is filling in with riparian vegetation of both planted and naturally colonizing species. Here again, the eddy created downstream of the structure provides a resting place for fish and boaters alike. The river widens and loses depth in this location, and redd locations flagged in this area indicate suitable spawning gravels are present. The structure will therefore provide shade, shelter, and habitat for salmon fry and smolt. There appears to be no movement or breakdown of the

structure nor is there evidence of any degradation of the cable, hardware or anchorage. The structure appears natural and blends well with the surroundings.

5.0 Conclusions

Monitoring of the project area in 2013 observed no obstructions to boating or to fish passage that required active management or removal of woody debris.

The White Salmon River is open to the public, and has assumed the behavior of a typical system in the deposition and flushing of transient woody debris. Based on the stability and function of the White Salmon River system and the limited likelihood that embedded large woody debris within the former reservoir site will dislodge, any future woody debris jams or accumulation in the area is likely to represent natural river form and function.

The ELJs have proven entirely stable and conducive to the creation of downstream eddies, bank protection and minor fish spawning and resting areas.

6.0 References

Federal Energy Regulatory Commission (FERC), 2010, Order Accepting Surrender of License, Authorizing Removal of Project Facilities, and Dismissing Application for New License, Project Nos. 2342-005 & 2342-011, December 16, 2010.

FERC, 2011a, Order on Rehearing, Denying Stay, and Dismissing Extension of Time Request, Project No. 2342-021, April 21, 2011.

FERC, 2011b, Order Modifying and Approving Woody Debris Management Plan, Project No. 2342-025, April 29, 2011.

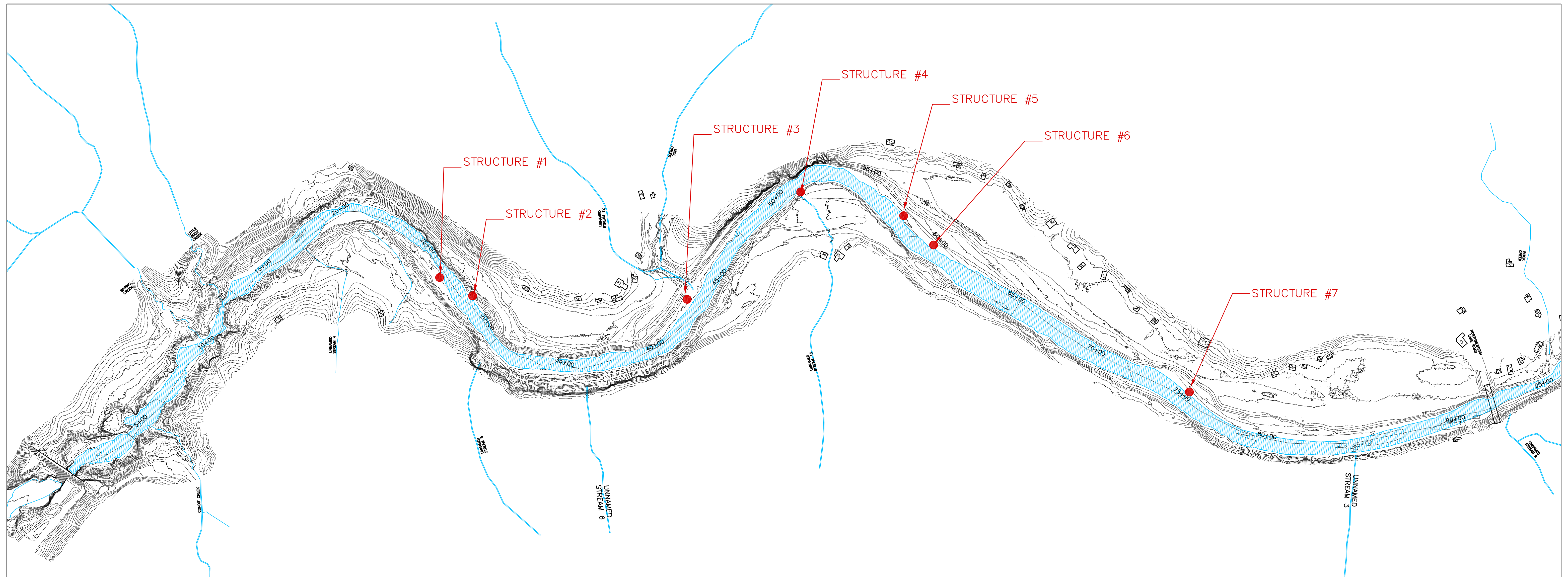
PacifiCorp Energy, 2011, Woody Debris Management Plan, March 15, 2011.

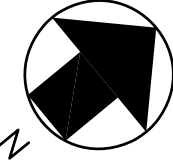

Washington Department of Ecology, 2010, Condit Dam Decommissioning Project 401 Water Quality Certification Order No. 8049, October 12, 2010.

US Department of the Army, 2011, Section 404 Permit, Corps of Engineers Action No. NWP-2004-523, May 13, 2011.

Appendix A

Woody debris plan as-built plan set, sheet 1





 SCALE IS 1" = 250' ON 24X36 SIZE SHEET
 ALL OTHER SHEETS USE SCALE BAR
 HORIZONTAL DATUM IS NAD 83

 ENGINEERED LOG JAM
 WOODY DEBRIS
 STRUCTURE LOCATIONS




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CONDIT DAM DECOMMISSIONING

WOODY DEBRIS PLAN
AS BUILT PLAN SET

Scale: 1" = 100 ft

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