Lewis River Hydroelectric Projects

FERC Project Nos. 935, 2071, 2111, 2213

2016 Annual Report

Annual Summary of License Implementation and Compliance: Aquatic and Terrestrial Resources

April 7, 2017

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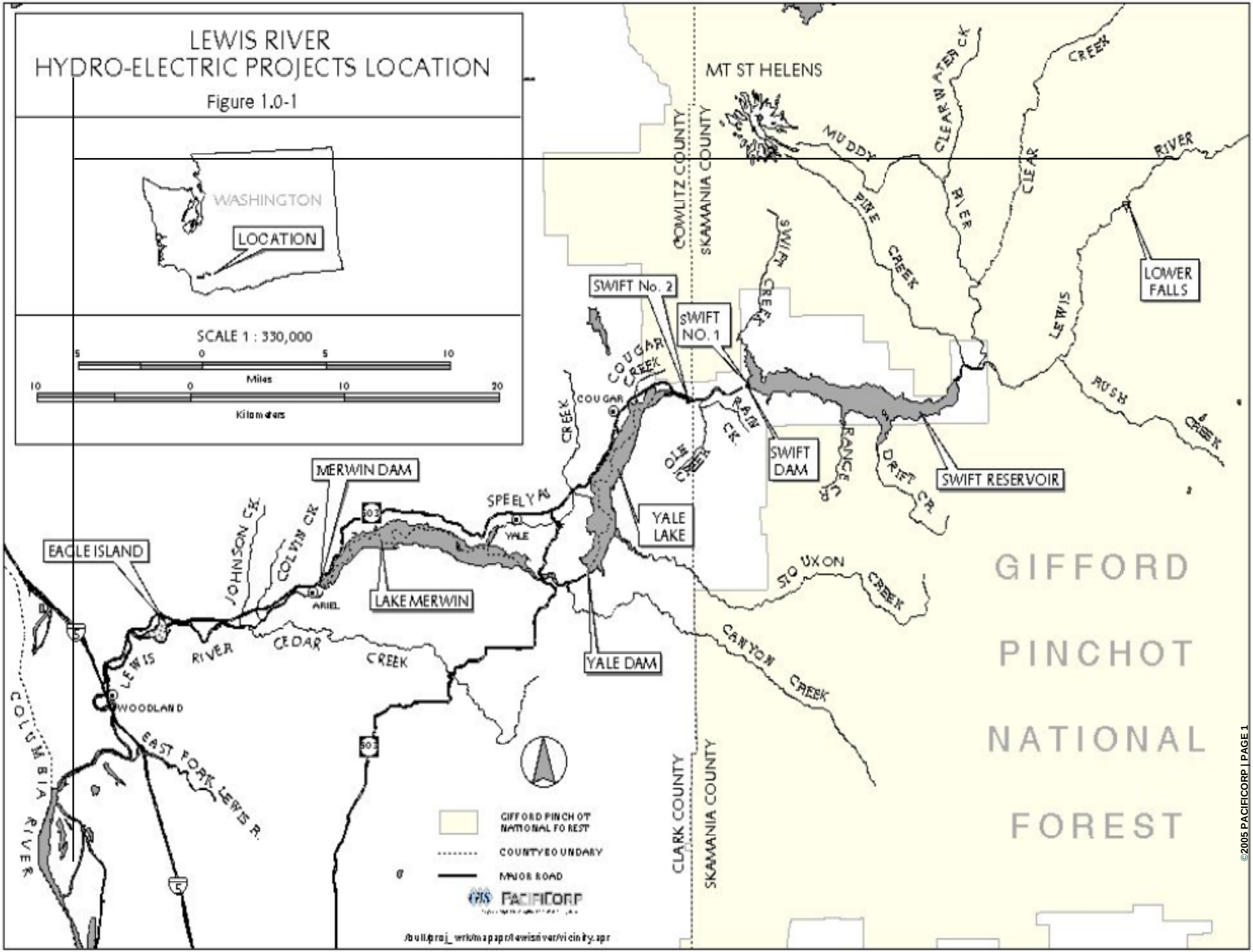

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Attachment B ..... *Section 14 of the Lewis River Settlement Agreement*

Attachment C ..... *Lewis River Bull Trout 2016 Annual Operations Report*

Attachment D ..... *Lewis River Bull Trout 2017 Annual Operations Plan*

Attachment E .. *Hatchery and Supplementation Program 2016 Annual Operations Report*

Attachment F ..... *2016 Lewis River Fish Passage Program Annual Report*

Attachment G ..... *Yale Water Quality Graphs*

Attachment H ..... *Swift No. 1 Water Quality Graphs*

Attachment I ..... *Merwin Water Quality Graphs*

Attachment J ..... *Yale Reservoir Kokanee 2016 Escapement Report*

Attachment K ..... *Aquatic Fund Close-Out Reports*

Attachment L ..... *Lewis River Wildlife Habitat Management Plan 2017 Annual Plan*

Attachment M ..... *Wildlife Habitat Management Plan Annual Progress Report for Operation Phase 2016*

Attachment N ..... *2016 Road Maintenance and Abandonment*

1.0 INTRODUCTION

This 2016 annual report prepared by PacifiCorp and the Public Utility District No. 1 of Cowlitz County, Washington ("Cowlitz PUD") is provided to the Federal Energy Regulatory Commission (FERC) and the Lewis River Settlement Agreement (SA) Parties to fulfill the reporting requirements of project licenses, articles 402 and 404, and article 14.2.6 of the agreement. It has been prepared in consultation with Terrestrial Coordination Committee (TCC) and Aquatic Coordination Committee (ACC) members. Period of record for this report is from January 1, 2016 to December 31, 2016.

To reflect the settlement Parties' interest in continuing coordination and communication of the implementation of SA and new FERC licenses, Article 14.2.6 of the SA requires PacifiCorp and Cowlitz PUD to prepare annual reports describing the activities of the TCC and the ACC. This SA Article stipulates that the Committee Coordinators for the TCC and ACC shall prepare and file with the FERC detailed annual reports on the fish and wildlife Protection, Mitigation, and Enhancement (PM&E) measures occurring during the prior year as well as plans for the coming year. This annual report fulfills the requirements of Article 14.2.6.

Per the Article language, any comments that were not incorporated into this final report are presented in **Attachment A** of this report.

This 2016 report is available to the Public on PacifiCorp's website at:
http://www.pacificorp.com/es/hydro/hl/lr.html# - Reports

Copies of this report are available from PacifiCorp upon request.

Lewis River – 2016, Photo courtesy of Jessica Kimmick – Sr. Environmental Analyst, PacifiCorp

1.1 BACKGROUND

Located on the North Fork of the Lewis River in southwestern Washington, the Lewis River Hydroelectric System consists of four operationally coordinated projects. PacifiCorp owns Swift No. 1 (FERC No. 2111), Yale (FERC No. 2071), and Merwin (FERC No. 935) projects which together generate 536 MW of electricity at full capacity. Cowlitz PUD owns the 77 MW Swift No. 2 Project (FERC No. 2213) which lies between Swift No. 1 and Yale. Currently, PacifiCorp operates Swift No. 2 for Cowlitz PUD under contract.

The Lewis Hydroelectric System was developed over a period of approximately 30 years. The first development, the Merwin project, was completed in 1931. The Yale project was completed next in 1953. The Swift No. 1 and Swift No. 2 projects were both completed in 1958.

1.1.1 Lewis River Settlement Agreement

In response to the FERC relicensing of the hydroelectric projects, interested parties collaborated on establishing a settlement agreement concerning future operations and responsive protection, enhancement and mitigation measures. On November 30, 2004, (Effective Date) 26 Parties (including two Licensees, five federal agencies, two state agencies, eight local/county agencies, two tribes, two citizens-at-large, and five non-governmental organizations) signed the Lewis River Settlement Agreement (PacifiCorp and Cowlitz PUD 2004). In December 2004, the Licensees filed with the FERC the SA along with a Joint Explanatory Statement and Supplemental Preliminary Draft Environmental Assessment (PacifiCorp and Cowlitz PUD 2004). The SA reflects the interests of all Parties; provides significant investments in fish and aquatic resources, wildlife and recreation; includes monitoring and evaluation and adaptive management; and includes ongoing coordination with the Parties through the Aquatics and Terrestrial Coordination Committees. The SA included support for 50-year licenses to allow the projects to continue to provide benefits to the Utilities customers. The Lewis River system allows PacifiCorp to maximize the value of its generation assets and power purchases to provide customer benefits. Cowlitz PUD uses its Swift No. 2 power in a similar fashion to provide benefits to its customers.

1.1.2 Environmental Impact Statement

In September 2005, the FERC released the Draft Environmental Impact Statement for the Lewis River Hydroelectric Projects (DEIS) (FERC 2005) for public comment. The DEIS was generally consistent with the SA in that it included most of the SA terms. In November 2005, the Parties filed comments on the DEIS. The FERC released the Final Environmental Impact Statement for the Lewis River Hydroelectric Projects March 24, 2006.

1.1.3 Agency Terms and Conditions

The USFS submitted modified Terms and Conditions in November 2005 (USDA FS 2005). The US Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) filed fishway prescriptions February 22, 2006 and February 14, 2006, respectively.

1.1.4 Endangered Species Act Consultations

In January 2005, Cowlitz PUD and PacifiCorp filed with the FERC Biological Evaluations (BEs) covering federally listed fish and wildlife in the Lewis River basin (PacifiCorp and Cowlitz PUD 2005a, PacifiCorp and Cowlitz PUD 2005b). The FERC modified the BEs, included them in the Final EIS and submitted the documents to the Services. The Proposed Action in the BEs is the SA. On September 15, 2006, the USFWS issued a Biological Opinion covering bull trout, northern spotted owls and bald eagles. The National Marine Fisheries Service issued its Biological Opinion covering their respective listed species August 27, 2007.

1.1.5 Water Quality Certifications

Both Licensees applied to the Washington State Department of Ecology (Ecology) for Clean Water Act Section 401 Water Quality Certifications for their respective projects in February 2005. At Ecology's request, both Licensees withdrew and resubmitted those applications in December 2005. Ecology issued a Draft Certification Order for each of the Lewis River projects February 10, 2006. Section 401Water Quality Certifications were issued to the Licensees and filed with the FERC October 9, 2006.

Subsequently, Ecology issued an Order Amendment for the Swift No. 2 project November 3, 2006 followed by a second Order Amendment (No. 4998) December 21, 2007, addressing Conditions 4.6.3.e, 4.6.4.a, and 4.6.5.a. in Administrative Order 3676. Order Amendment No. 3 (No. 5531), issued by DOE January 17, 2008 replaces Condition 3 of Amended Order 4998 (Condition 4.6.5.a of Order 3676). On November 7, 2011, Ecology issued Order Amendment 8832 which replaced conditions of Order No. 3676 relating to water quality standards as provided by RCW 90.48 and WAC 173-210A.

PacifiCorp filed with the FERC an Objection to Inconsistent 401 Certificates Pursuant to Section 15.2 of the Lewis River Settlement Agreement November 16, 2006 and conducted two Alternative Dispute Resolution meetings with SA parties December 11, 2006 and December 15, 2006. Parties reached a resolution at the December 15, 2006 meeting.

On December 21, 2007 the Washington Department of Ecology (Ecology) issued Amended Orders 5000, 4999 and 5001 for the Merwin (Order No. 3678), Yale (Order No. 3677) and Swift No. 1 (Order No. 3679) Certifications respectively. These amendments replaced conditions 4.6.3e, 4.6.4a and 4.6.5a of the Merwin, Yale and Swift No. 1 Certifications, as well as condition 4.6.4e of the Swift No. 1 Certification.

On January 17, 2008, Ecology issued Amended Orders 5329, 5328 and 5330 which replaces condition 4.6.5a as provided in Amended Order 5000 for the Merwin Certification, Amended Order 5328 replacing condition 4.6.5a as provided in Amended Order 4999 for the Yale Certification and Amended Order 5330 replacing condition 4.6.5a as provided in Amended Order 5001 for the Swift No. 1 Certification.

On October 3, 2008, Ecology issued Amended Orders 5743, 5972 and 5974 which replaces condition 4.2(1) and portions of 4.8(3) Table 2 as provided for in Amended order 5329 for the Merwin Certification, Amended Order 5972 replaces portions of 4.8(3) Table 2 as provided in

Amended Order 5328 for the Yale Certification and Amended Order 5974 replaces portions of 4.8(3) Table 2 as provided in Amended Order 5330 for the Swift No. 1 Certification.

On June 22, 2009, Ecology issued Amended Order 6811 which modified the mixing zone for turbidity as it relates to construction of the Upper Release and Constructed Channel implementation.

On February 1, 2010, Ecology issued Amended Order 7325 which modifies Order 3679. Specifically, this amendment extends the expiration dated listed in section D. Duration of Order of amendment 6811 from December 31, 2009, to March 31, 2010.

On November 7, 2011, Ecology issued Amended Orders 8833, 8834 and 8831 which replaced conditions of Administrative Orders 3677,3678,and 3679, respectively, to comply with new water quality standard language modified by Washington Administrative Code (WAC 173-201A-600(1)(a)(ii)).

The Water Quality Certifications and associated amendments for the Swift No. 1, Swift No. 2, Yale and Merwin projects are available for viewing on PacifiCorp's website at http://www.pacificorp.com/es/hydro/hl/lr.html# - (Relicensing Documents).

1.1.6 New FERC Licenses

On June 26, 2008, the FERC provided the Utilities with new operating licenses for the Lewis River hydroelectric projects (Merwin Project No. 935, Yale Project No. 2071, Swift No. 1 Project No. 2111, and Swift No. 2 Project No. 2213). The license periods are each 50 years starting June 1, 2008. Each license includes the respective conditions of the services biological opinions and respective conditions of the Washington Department of Ecology 401 certificates. In general the licenses include terms of the Lewis River Settlement Agreement with few exceptions. Parties to the SA continue to abide by the SA terms including those terms outside the FERC requirements. As such this report may contain information not required by the FERC licenses.

1.1.7 2016 Annual Report and Consultation

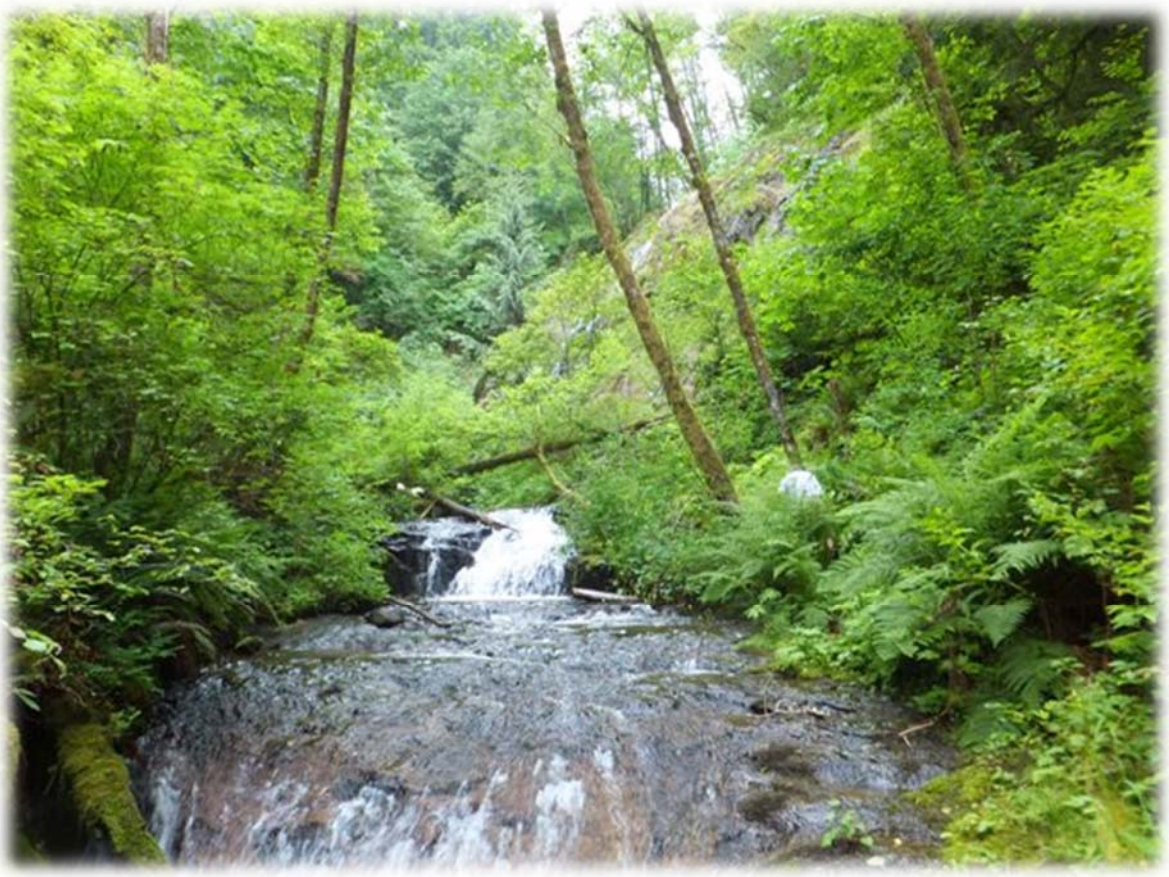
PacifiCorp and Cowlitz PUD prepared this 2016 Lewis River Hydroelectric Projects Annual Report (Annual Report) in consultation with the ACC and TCC. A draft report was provided to the ACC and TCC March 3, 2017 for review and comment. Following a 30-day comment period ending April 3, 2017, the Licensees reviewed the ACC and TCC comments and prepared this final Annual Report. This report was provided to the FERC and the Settlement Agreement Parties April 6, 2017 to fulfill the requirements of Section 14.2.6 of the Settlement Agreement.

The period of record for the 2016 Annual Report is January 1, 2016 through December 31, 2016.

The following Plans and Reports were completed in 2016:

- Aquatics Fund Projects Annual Report – April 2017
- Wildlife Habitat Management Plan (WHMP Annual Plan for Operation Phase 2017)
- WHMP Annual Progress Report Operations Phase 2016
- Aquatic Coordination Committee/Terrestrial Coordination Committee 2016 Annual Report
- Lewis River Hatchery & Supplementation Program Annual Operations Report 2016
- Lewis River 2016 Fish Passage Program Annual Report
- Lewis River Bull Trout 2016 Annual Operations Report
- Lewis River Bull Trout 2017 Annual Operations Plan
- Yale Reservoir Kokanee 2016 Escapement Report

The water quality monitoring (Section 4) and terrestrial resources (Section 5) sections of this Annual Report have been prepared in cooperation with Cowlitz PUD.



Lewis River - Photo courtesy of Jeremiah Doyle – Senior Staff Scientist, PacifiCorp

1.2 Annual Report Organization

The 2016 Lewis River Annual Report provides the following information as required under Section 14.2.6 of the SA and the 401 Water Quality Certifications:

Section 2.0 Aquatics and Terrestrial Coordination Committees (ACC, TCC)

Section 2.1 ACC and TCC Membership

Section 3.0 Aquatic Resources

Section 3.1 ACC Meetings
Section 3.2 Aquatic Measures Implemented in 2016
Section 3.3 Aquatics 2017 Annual Plans

Section 4.0 Water Quality

Section 4.1 PacifiCorp Water Quality Measures Implemented in 2016
Section 4.2 PacifiCorp Water Quality 2017 Annual Plan
Section 4.3 Cowlitz PUD Water Quality Measures Implemented in 2016
Section 4.4 Cowlitz PUD Water Quality 2017 Annual Plan

Section 5.0 Terrestrial Resources

Section 5.1 TCC Meetings
Section 5.2 PacifiCorp Terrestrial Measures Implemented in 2016
Section 5.3 PacifiCorp Terrestrial 2017 Annual Plan
Section 5.4 Cowlitz PUD Terrestrial Measures Implemented in 2016
Section 5.5 Cowlitz PUD Terrestrial 2017 Annual Plan

Section 6.0 Law Enforcement

Section 6.1 Motorized Vehicle Issues, Vandalism and Malicious Mischief, Security and Public Safety Support

Section 7.0 Funding Tables

Section 8.0 Literature Cited

2.0 AQUATICS AND TERRESTRIAL COORDINATION COMMITTEES

Section 14 of the Lewis River Settlement Agreement includes several measures that define the Parties' roles and obligations. The full text of Section 14 of the Settlement Agreement is provided in **Attachment B**. The structure and process of the ACC and TCC is intended to provide a forum to address time-sensitive matters, early warning of problems, and coordination of member organization actions, schedule, and decisions to save time and expense. The ACC and TCC make decisions based on consensus, while implementing the Settlement Agreement.

More specifically, Section 14:

- Establishes the Aquatics Coordination Committee (ACC) and Terrestrial Coordination Committee (TCC).
- Establishes the Licensees' ACC and TCC Coordinators (Coordinators).
- Describes the coordination and decision making roles of the ACC and TCC.
- Requires the ACC and TCC to coordinate and Consult on development of plans by the Licensees.
- Requires the ACC and TCC to review information and oversee, guide, and make comments and recommendations on implementation and monitoring of the terrestrial and aquatic Protection, Mitigation and Enhancement (PM&E) Measures, including plans.
- Requires the ACC and TCC to establish, among other things:
    i. Procedures and protocols for conducting committee meetings and deliberations to ensure efficient participation and decision making;
    ii. Rules for quorum and decision making in the absence of any member;
    iii. Alternative meeting formats as desired, including phone or teleconference; and
    iv. The methods and procedures for updating committee members on interim progress of development and implementation of the terrestrial and aquatic PM&E Measures.
- Requires the ACC and TCC to establish subcommittees to carry out specified committee functions and responsibilities and establish the size of, membership of, and procedures for, any such subcommittees.
- Requires the Licensees' Coordinators to prepare and file with the FERC detailed annual reports on the TCC and ACC activities; monitoring and evaluations under the Monitoring and Evaluation Plan (M&E Plan) described in SA Section 9; implementation of the terrestrial and aquatics PM&E Measures occurring during the prior year; and plans for the coming year, and water quality monitoring information.
- Requires the Licensees to consult with the ACC and TCC when preparing the Annual Report.

2.1 ACC and TCC Membership

In December 2004 the Licensees appointed their respective ACC and TCC Coordinators. At the same time, the Licensees established the ACC and TCC, and invited the Parties to designate representatives (and alternates) for membership on these committees. Current Party representation for each committee is shown in Error! Reference source not found. and **Error! Reference source not found.**. Fifteen Parties have designated representatives to the ACC and eleven Parties designated representatives to the TCC.

Committee meetings were conducted in every month in 2016. During the year, the ACC met 12 times and the TCC met 8 times.

The purposes of the Coordination Committee meetings were to:

- Develop study and monitoring plans.
- Discuss implementation strategies for PM&E measures.
- Oversee implementation of the PM&E measures.

Sections 3.1, 3.2, and 5.1 of this report summarize major items discussed at the ACC and TCC meetings during the reporting period. Detailed meeting summaries are provided on the PacifiCorp Web site at:
http://www.pacificorp.com/es/hydro/hl/lr.html# - ACC or TCC > 2016

Lewis River – 2016, Photo courtesy of Kim McCune – Sr. Business Administrator, PacifiCorp

Table 1. ACC Members and Alternates.

ACC Member	Organization	Alternate
Michael Garrity	American Rivers	To be named
Public Works Director	City of Woodland	To be named
No representative at this time	Clark County	To be named
No representative at this time	Cowlitz County	To be named
Eli Asher[1]	Cowlitz Indian Tribe	Pete Barber
No representative at this time	Cowlitz-Skamania Fire District No. 7	To be named
Jim Malinowski	Fish First	To be named
No representative at this time	Lewis River Citizens at-large	To be named
Mariah Stoll-Smith Reese	Lewis River Community Council	To be named
Jeff Breckel	Lower Columbia River Fish Recovery Board	Steve Manlow[2]
Michelle Day	National Marine Fisheries Service	To be named
No representative at this time	National Park Service	To be named
No representative at this time	North County Emergency Medical	To be named
Frank Shrier	PacifiCorp (PacifiCorp Co-Chair)	Erik Lesko
Amanda Froberg[3]	PUD of Cowlitz County (PUD Co-Chair)	To be named
No representative at this time	Rocky Mountain Elk Foundation	To be named
No representative at this time	Skamania County	To be named
Bill Bakke	The Native Fish Society	To be named
Michael Garrity	Trout Unlimited	To be named
No representative at this time	US Bureau of Land Management	To be named
Mark Celedonia	US Fish & Wildlife	Lindsy Wright
Ruth Tracy[4]	USDA Forest Service	To be named
Pat Frazier	Washington Dept of Fish & Wildlife	Aaron Roberts
No representative at this time	Washington Interagency Committee	To be named
No representative at this time	Woodland Chamber of Commerce	To be named
Bob Rose	Yakama Nation	To be named
No representative at this time	WA Recreation & Conservation Office	To be named

[1] As of July 6, 2016 Eli Asher was appointed the primary ACC representative on behalf of the Cowlitz Indian Tribe to replace Shannon Wills and Pete Barber as the alternate.
[2] As of April 27, 2016 Steve Manlow was appointed the ACC representative on behalf of the Lower Columbia Fish Recovery Board to replace Pat Frazier.
[3] As of September 1, 2016 Amanda Froberg was appointed the primary ACC representative on behalf of Cowlitz PUD to replace Diana Gritten-MacDonald who retired from Cowlitz PUD.
[4] As of February 11, 2016 Ruth Tracy was appointed the primary ACC representative on behalf of USDA Forest Service to replace Baker Holden.

Table 2. TCC Members and Alternates.

TCC Member	Organization	Alternate
No representative at this time	American Rivers	To be named
Public Works Director	City of Woodland	To be named
No representative at this time	Clark County	To be named
No representative at this time	Cowlitz County	To be named
Nathan Reynolds	Cowlitz Indian Tribe	Erik White
No representative at this time	Cowlitz-Skamania Fire District No. 7	To be named
No representative at this time	Fish First	To be named
No representative at this time	Lewis River Citizens at-large	To be named
Mariah Stoll-Smith Reese	Lewis River Community Council	To be named
No representative at this time	Lower Columbia River Fish Recovery Board	To be named
Michelle Day	National Marine Fisheries Service	To be named
No representative at this time	National Park Service	To be named
No representative at this time	North County Emergency Medical	To be named
Kirk Naylor[5]	PacifiCorp (PacifiCorp Co-Chair)	Kendel Emmerson
Amanda Froberg[6]	PUD of Cowlitz County (PUD Co-Chair)	To be named
Bill Richardson	Rocky Mountain Elk Foundation	Ray Croswell
No representative at this time	Skamania County	To be named
No representative at this time	The Native Fish Society	To be named
No representative at this time	Trout Unlimited	To be named
No representative at this time	US Bureau of Land Management	To be named
Mark Celedonia	US Fish & Wildlife	To be named
Ruth Tracy[7]	USDA Forest Service	To be named
Peggy Miller	Washington Dept of Fish & Wildlife	Eric Holman
No representative at this time	Washington Interagency Committee	To be named
No representative at this time	Woodland Chamber of Commerce	To be named
Bob Rose	Yakama Nation	Joanna Meninick

[5] As of May 19, 2016 Kendel Emmerson accepted the TCC Co-Chair role for PacifiCorp and replaced Kirk Naylor who retired from PacifiCorp May 10, 2016.
[6] As of September 1, 2016 Amanda Froberg was appointed the primary TCC representative on behalf of Cowlitz PUD to replace Diana Gritten-MacDonald who retired from Cowlitz PUD.
[7] As of December 31, 2016 Ruth Tracy was appointed the primary TCC representative on behalf of USDA Forest Service to replace Mitch Wainwright.

3.0 AQUATICS RESOURCES

3.1 ACC Meetings

The purpose and role of the Aquatic Coordination Committee (ACC), as defined in Section 14.1 of the SA is to facilitate coordination and implementation of the aquatic PM&E measures.

The structure and process of the ACC is intended to provide a forum to address time-sensitive matters, early warning of problems, and coordination of member organization actions, schedule, and decisions to save time and expense. The ACC makes decisions based on consensus, while implementing the Settlement Agreement and the FERC license requirements.

3.1.1 ACC Meetings and Conference Calls: Overview

This section summarizes major items discussed at ACC meetings during the 12-month reporting period. Detailed meeting summaries are provided on the PacifiCorp website at: http://www.pacificorp.com/es/hydro/hl/lr.html# - ACC > 2016

- ACC agreed to postpone the Yale Habitat Preparation Plan until Fall 2017.
- The 2015 Draft ACC/TCC Annual Report was distributed for its 30-day review and comment period March 2, 2016.
- The 2015 Draft ACC/TCC Annual Report was submitted to the FERC April 15, 2016.
- All studies specific to the Development of New Information to Inform Fish Passage Decisions at the Yale and Merwin Hydro Projects on the Lewis River were presented to the ACC April 14, 2015 followed by a 30-day review April 25, 2016.
- On May 12, 2016 the ACC determined to use direct release for 2016 into areas upstream of Swift Dam and use Crab Creek for acclimation.
- The ACC agreed to direct release Crab Creek fish in 2016 at Clear Creek, Muddy and Crab Creek facilities. However, Crab Creek facility will not be used until the Forest Service consultation for fall release is complete.
- ACC agreed to hold off on the ATE study for spring Chinook in 2016, and will revisit whether coho will be tagged this fall given the current low run predictions.
- The ACC toured the Muddy River and Clear Creek Acclimation Pond Site June 9, 2016.

- The ACC approved the 2016 Spring Chinook Acclimation Planting Schedule and Evaluation Plan with minor adjustments to the proportionate sample size August 11, 2016.

- PacifiCorp submitted the Monitoring & Evaluation Plan re-write to the ACC for its 90-day review period September 2, 2016.

- PacifiCorp distributed the 2016/2017 Lewis River Aquatic Fund announcement to all interested parties September 2, 2016.

- On September 8, 2016 the ACC agreed to forego Coho tagging efforts in 2016 and evaluate ATE for the steelhead season which begins in February 2017. The ACC will then revisit Coho tagging and ATE evaluation in fall 2017.

- The Utilities received six (6) Aquatic Fund pre-proposals by the due date of October 3, 3016.

- The ACC Aquatic Fund Subgroup began its review of the Aquatic Fund 2016/2017 Pre-Proposals November 10, 2016.

- The ACC agreed to submit comments on the Aquatic Fund Pre-Proposals by December 1, 2016.

- On December 8, 2016 the utilities provided the ACC with an In Lieu Fund decision process update.

- The ACC approved extension of the 2013 Bull Trout Habitat Restoration Project ID Assessment until December 31, 2017.

3.1.2 ACC Meeting Notes

The Licensees prepared draft notes for ACC meetings and conference calls. These notes were distributed to ACC members for review and comment approximately one week after the subject meeting. After review, revision and approval by the ACC, the final notes were entered in the public record and posted on the PacifiCorp web site at:
http://www.pacificorp.com/es/hydro/hl/lr.html# - ACC > 2016

3.2 Aquatic Measures Implemented as of the End of 2016

This section presents the actions taken by the Utilities during January 2016 through December 2016 toward Aquatic requirements of the Lewis River Settlement Agreement and the FERC licenses. It also includes previously completed Settlement Agreement actions. The actions are identified by agreement Article number as the agreement is more specific in detailing the requirements than the license orders which in essence, incorporate agreement terms via agency

regulatory authority. In some instances previous actions are noted to provide a more comprehensive record.

A description of funding amounts deposited and disbursed during 2016 is provided in Section 7.0 – Funding.

3.2.1 SA Section 4.1 Common Provisions Regarding Fish Collection and Transport Facilities

Studies to Inform Design Decisions (SA 4.1.1)
PacifiCorp has completed the Merwin Tailrace Fish Behavior study to provide information that could assist the planning and design of the Merwin Upstream Collection and Transport Facility. The study plan was developed in coordination with the ACC and was finalized as a revised document June 30, 2005. In 2005 through 2006, the study was conducted and a final report was issued in February 2007.

Adult Trap Efficiency for Salmonids (SA 4.1.4c)
The Adult Trap Efficiency (ATE) standard was first discussed by the ACC at the February 14, 2009 meeting. Bryan Nordlund of NMFS subsequently developed a proposal for the ATE standard along with a matrix for a phased fish trap implementation. This proposal was the topic of nearly every ACC and Engineering subgroup meeting for most of the year accompanied by several offline conversations. An ATE determination methodology and standard was finally accepted by the ACC at their December 11, 2009 meeting with the efficiency set at 98%. Detailed methodology and definitions were delegated to the Draft Monitoring and Evaluation Plan which was submitted to the FERC in June 2009 and approved in December 2010. The Merwin Upstream Collection and Transport facility was not substantially completed until April 2014. Based on this, PacifiCorp proposed and the ACC agreed to suspend the start date of the two year ATE evaluation until spring 2015. ATE evaluation continued in 2016 with the monitoring of late-run winter steelhead only. The annual report for the Merwin ATE Study can be found in the Lewis River Fish Passage Program 2016 Annual Report (**Attachment G**).

3.2.2 SA Section 4.2 Original Merwin Trap

Original Merwin Trap suspended operation in June 2013.

Merwin Trap Flow Restrictions (SA 4.2b)
To provide a margin of safety for personnel, PacifiCorp limited the 2012 river discharge at Merwin dam/powerhouse to 5,500 cfs or less as river flow conditions warranted when personnel were in the trap. Flow limitations were coordinated with WDFW hatchery staff. With completion of the Merwin Upstream Collection and Transport facility, flow restrictions are no longer needed.

Merwin Trap Upgrades (SA 4.2c)
On November 29, 2005 PacifiCorp provided the Services (USFWS and NOAA Fisheries) and WDFW a letter requesting a meeting to discuss potential upgrades and operational procedures to improve operating conditions for personnel working in the Merwin Trap by providing a greater margin of safety. Attached to the letter was a memo that identified company proposed measures and a supporting Engineering Study (Report No. RES 3000028924).

Final designs were submitted to the FERC February 2, 2007 and acceptance received from the FERC February 12, 2007. Final designs and the FERC correspondence are available upon request.

Interim Merwin Trap Operations (SA 4.2d)
For 2012, the Merwin Trap was operated in coordination with WDFW or PacifiCorp's new Fish Passage crew to collect hatchery fish returning from the ocean and to transport any bull trout collected to Yale reservoir. Per the SA, WDFW increased frequency of trap cleanout to daily during the work week (Monday - Friday) unless flows or inadequate staff prevented such effort. PacifiCorp coordinated with WDFW and made reasonable efforts to operate the Merwin powerhouse to allow fish trapping operations at the trap. Fish other than hatchery fish or wild winter steelhead were returned to the river downstream of Merwin Dam.

3.2.3 SA Section 4.3 Merwin Upstream Collection and Transport Facility

On March 2, 2009, PacifiCorp submitted to the subgroup and the ACC the 60 percent design report. Following comments on the 60 percent design report, the subgroup worked on developing the design to a 100 percent level. On June 26, 2009, the subgroup was provided the 90 percent design report. Following the review period, PacifiCorp worked with the subgroup to finalize the report. A 100 percent design report was submitted to the FERC December 23, 2009. Periodic project updates were provided at monthly ACC meetings until the upstream collection facility was completed.

On September 4, 2012, PacifiCorp assumed operations of the existing adult trap located at Merwin Dam. This included daily (Mon. – Fri.) removal of fish from the trap, vertical adjustment of weir orifice, transportation of target species upstream, and data management. WDFW remained responsible for transporting all non-target species (i.e., species not identified in PacifiCorp's upstream transport plan) to the hatcheries or to the lower Lewis River. On June 30, 2013, the existing Merwin Trap was decommissioned to allow for construction of the new facility. The new upstream collection and transport facility resumed operation in late December 2013 and was considered substantially complete in April 2014. The following information is a summary of the Merwin trap operations in 2014. Detailed results of the 2016 operations and M&E evaluations are included in the attached Lewis River Fish Passage Program 2016 Annual Report (**Attachment F**).

In compliance with WDFW standards, all adult salmonids collected were identified to species and sorted based on the following characteristics: missing adipose fin with no coded wire tag detection *(AD CLIP ONLY),* adipose fin absent and present with a coded wire tag detection *(CWT),* adipose fin intact with no coded wire tag detection *(WILD),* and adipose fin intact with blank wire tag present *(WILD + BWT).* All fish were also identified as male *(M),* female *(F),* or jacks *(J).*

A total 23,570 fish were captured at the Merwin Trap in 2016 (**Table 3**). Among the species collected, hatchery summer steelhead accounted for the majority of fish captured (n=10,110) followed by late run coho (n=5,285), early run coho (n=4,366), winter steelhead (n=2,980), spring Chinook (n=399), and fall Chinook (n=284).

Table 3. 2016 Merwin Trap Capture Data.

Species	AD Clip			CWT			Wild			Wild Recap			Wild-BWT		Recap		Not sexed	Total
	M	F	J	M	F	J	M	F	J	M	F	J	M	F	M	F		
Spring Chinook	161	169	53				7	8	1									399*
Fall Chinook	72	96	16				44	48	8									284
Early Coho	1,002	1,118	321	188	166	64	510	596	401									4,366
Late Coho	2,289	2,082	85	353	315	18	69	63	11									5,285
Summer Steelhead	2,533	3,732													1,578	2,267		10,110
Winter Steelhead	893	1,089					27	23					411	440	52	45		2,980
Sockeye Salmon							15	17		3	11							46
Chum Salmon								1										1
Pink Salmon																		0
Cutthroat (>13 inches)																	73	73
Cutthroat (< 13 inches)																	2	2
Rainbow (< 20 inches)																	24	24
Bull Trout (> 13 inches)																		0
Bull Trout (< 13 inches)																		0
															Total			23,570

*Ratio of M:F for spring Chinook may be different than those reported by Washington Department of Fish and Wildlife hatchery broodstock

A total 8,191 adult salmonids (7,346coho salmon, 772 winter steelhead, and 73 cutthroat) were transported upstream throughout the migration period in 2016 as part of the PacifiCorp's reintroduction program (**Table 4**). No spring Chinook were transported upstream in 2016.

Table 4. Summary of 2016 Upstream Transport to Swift Reservoir.

Species	Male	Female	Jack	Not sexed	Female:Male Ratio	Jack:Adult Ratio	Total
Spring Chinook	-	-	-	-	-	-	*0*
Early Coho	1,786	1,789	536	-	0.77	0.15	*4,111*
Late Coho	1,644	1,588	3	-	0.96	0.0009	*3,235*
Winter Steelhead	382	390	-	-	1.02	-	*772*
Cutthroat >13"	-	-	-	73	-	-	*73*
Bull Trout >13"	-	-	-	-	-	-	*0*
						Total	*8,191*

3.2.4 SA Section 4.4 Downstream Transport at Swift No. 1 Dam

Modular Surface Collector (SA 4.4.1)
The Modular Surface Collector, referred to as the Swift Floating Surface Collector (FSC), operated for most of 2016 with a planned shutdown from July through mid-October 2016 for scheduled maintenance. Detailed results of the 2016 operations and M&E evaluations are included in the attached Lewis River Fish Passage Program 2016 Annual Report (**Attachment F**). A total 73,539 salmonids were captured by the FSC in 2016. Of these fish, 68,175 were transported and released downstream of Merwin Dam. Juvenile coho accounted for the highest proportion of the overall catch (82.91%), followed by spring Chinook (5.2%), steelhead (3.1%) and coastal cutthroat trout (1.4%). A total 3,458 hatchery rainbow trout and 40 bull trout were collected in 2016 and returned to the reservoir. A full accounting of the required standards, such as injury rate, capture efficiency, Overall Downstream Survival (ODS), and others, is included in the Lewis River Fish Passage Program 2016 Annual Report (**Attachment F**).

Release Ponds (SA 4.4.3)
In 2006, PacifiCorp notified the ACC representatives that the company was working to secure a site for the Release Ponds. PacifiCorp initially worked with WDFW to secure acquisition of a site just downstream of Woodland, Washington. The site met the criteria established in the SA and the land was available for trade with WDFW.

In 2009, PacifiCorp discovered that the identified WDFW parcel was much smaller than originally recorded with the county and was not of suitable size. PacifiCorp then initiated talks with the adjacent landowner to pursue either purchase or lease. Discussions with continued through to October 2010, at which point the adjacent landowner withdrew from negotiations.

In November 2010, PacifiCorp initiated an effort to find an alternate site upriver from the previously considered location. A site was selected and purchased and final designs updated. The site is on approximately 5 acres near River Mile 9 and the town of Woodland, Washington. PacifiCorp has prepared documentation for formal consultation between NMFS and the FERC on Eulachon smelt (*Thaleichthys pacificus*) and associated critical habitat.

A Biological Opinion from NOAA Fisheries was not submitted to the FERC as of the end of 2014. The construction schedule will not be established until the Biological Opinion is complete, the US Army Corp of Engineers issues the dredge and fill permit, and Washington Department of Natural Resources issues a lease for the in-water structure.

In 2015, PacifiCorp received notification from the City of Woodland that the Company would need to resubmit permit applications for construction of the Release Ponds since the previous permits had expired. PacifiCorp staff resubmitted permit applications and continued to wait for the city permits at the end of 2015. Land Use permit approvals were issued by the City of Woodland, USACOE and WDFW, with the final approval granted April 16, 2016. As of December 31, 2016 a building permit remains in the process of being obtained. A building permit is expected as soon as a land use agreement is obtained for a public sidewalk fund to be set aside at the request of the City of Woodland. An aquatic lease was also requested from the Washington Department of Natural Resources (WDNR). As of the end of 2016, PacifiCorp was still waiting for the sidewalk fund which is needed before an aquatic lease and building permit will be issued.

3.2.5 SA Section 4.5 Downstream Passage at Yale Dam

Implementation scheduled prior to 13th anniversary of Yale Project License.

3.2.6 SA Section 4.6 Downstream Passage at Merwin Dam

Implementation scheduled prior to 17th anniversary of Merwin Project License.

3.2.7 SA Section 4.7 Upstream Passage at Yale Dam

Implementation scheduled prior to 17th anniversary of Yale Project License.

3.2.8 SA Section 4.8 Upstream Passage at Swift Projects

Implementation scheduled prior to 17th anniversary of Swift No.1 Project License.

3.2.9 SA Section 4.9.1 Interim Bull Trout Collection and Transport Programs

Per Article 402(a) in the FERC licenses and the Lewis River SA section 4.9.1, PacifiCorp annually captures and transports bull trout from the Yale powerhouse tailrace (upper Merwin Reservoir) to the mouth of Cougar Creek, a Yale Reservoir tributary. A total of 159 bull trout have been captured from the Yale tailrace since the program began in 1995.

For Methods, Materials, and Results concerning number of bull trout captured and transported during 2015 Yale Tailrace activities as well as pertinent biological information of individual bull trout captures, please see **Attachment C**, *Bull Trout 2016 Annual Operations Report.*

Investigation of Alternative Collection Methods (SA 4.9.2)

PacifiCorp continues to consider more effective and less intrusive methods to collect bull trout from the Yale tailrace until capital improvements and future fish passage is implemented prior to 2023. Past alternative methods investigated include; beach seines, purse seines, drifting tangle nets when the powerhouse is online, and angling.

In 2016, tangle nets and angling were the only methods used and, to date, remain the most

effective. Annual Consultation concerning 2016 bull trout monitoring activities occurred between the Utilities and the USFWS in February 2017 at which time it was agreed that tangle nets would again be utilized in the upcoming field season to attempt to capture bull trout from within the Yale tailrace waters.

Yale and Merwin Bull Trout Entrainment Reduction (SA 4.9.3)
PacifiCorp completed and distributed a revised *Yale Project Entrainment Reduction Plan* to the ACC and the Services May 16, 2008. The plan is available on PacifiCorp's website: http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Hydro/Hydro_Licensing/Lewis_River/li/acc/Yale_Hydro_Project_Bull_Trout_Entrainment_Final_Report_and_Bull_Trout_Reduction_Plan_January_2008.pdf

3.2.10 SA Section 4.10 Bull Trout Passage in the Absence of Anadromous Fish Facilities

If Yale Downstream Facility is not constructed, implement prior to 13th anniversary of Yale Project License.

3.2.11 SA Section 5.1 Yale Spillway Modifications

PacifiCorp has nearly completed installation of a spillway barrier net. This net is similar in design and made of material similar to the Entrainment Reduction net in Yale Reservoir. The net is designed to exclude bull trout from the spillway at any spill flow less than 6,000 cfs (the average spill volume for Yale Spillway) meeting the intent of SA 5.1. When spill flows exceed 6,000 cfs, the net floating line is designed to sink to allow large debris to float over the net and exit Yale reservoir via spill. This procedure avoids damaging the net. It is anticipated that the occurrence of spills greater than 6,000 cfs will be rare so bull trout spillway entrainment is consequently expected to be low. As of the end of 2012, some of the floating system parts failed during installation so PacifiCorp solicited approvals from ACC members and the FERC to extend the final installation to March 31, 2013. ACC members, including the Services, approved the extension but the FERC had not responded prior to the end of 2012. The FERC approved the extension in spring 2013 and the spillway entrainment net was completed October 15, 2013.

3.2.12 SA Section 5.2 Bull Trout Habitat Enhancement Measures

PacifiCorp continued to manage the Cougar Creek Conservation Covenant to the benefit of bull trout. Noxious weeds (scotch broom and Himalayan blackberry) were identified and treated along the transmission Right Of Way (ROW) and in previously tree harvested lands along Panamaker Creek.

A habitat improvement project on Panamaker Creek was submitted by PacifiCorp through the 2007/2008 Aquatic Habitat Fund process. This project was completed in August 2008 and had the following benefits:

- Reduced sediment input through the decommissioning of one mile of road;
- Removal of nine culverts and installation of ten cross ditches for runoff control; and
- Re-vegetation of all disturbed soils.

Per the SA, Cowlitz PUD managed the Devil's Backbone Conservation Covenant to benefit bull trout.

3.2.13 SA Section 5.3 Reserved

3.2.14 SA Section 5.4 Reserved

3.2.15 SA Section 5.5 Bull Trout Limiting Factors Analysis

Contract was awarded to Meridian Environmental, Inc. (the Consultant). The Consultant completed the field work and provided a final report in May 2007. The report describes three potential streams that could support bull trout if improvements were made to the habitat. The improvements include shading to reduce stream temperatures and riparian habitat stabilization. An overriding limiting factor in two of the three streams was lack of water during the critical spawning period.

3.2.16 SA Section 5.6 Public Information Program to Protect Listed Anadromous Species

PacifiCorp maintains signage at the Eagle Cliff area to inform the public of specific angling regulations that are designed to protect both bull trout and reintroduced anadromous species (**Figure 1**). Additionally, WDFW has proposed new regulations on Swift Reservoir prohibit the taking of unclipped adipose fin rainbow trout over 20 inches in length. This effort will help protect transported steelhead and kelts.

3.2.17 SA Section 5.7 Public Information Program to Protect Bull Trout

PacifiCorp maintains signage at most reservoir and river access sites that are owned by the company. The company also provides informational flyers to the public at all camping and day use areas the company owns.

Figure 1. Signs posted for public information.

3.2.18 SA Section 6.1 Flow Releases in the Bypass Reach: Upper Release and Constructed Channel

Upper Release Point (SA 6.1.2)

Upper Release Point water flowed continuously throughout 2016. However, the high water event that occurred in December 2015 flooded the controls for the Upper Release. In response to loss of control, releases were set to exceed the minimum flows by a larger amount than normal operations would dictate in order to stay in compliance until the repair parts were received and installed in September (**Figures 2 and 3**). The Swift project did not release any spill in 2016.

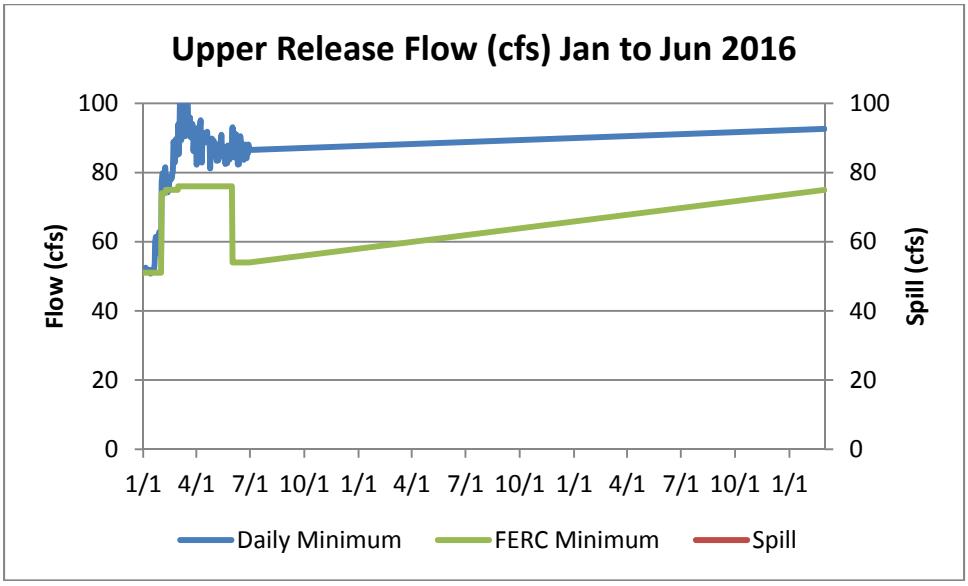


Figure 2. Daily Minimum Release flows from January 1 to June 30, 2016.

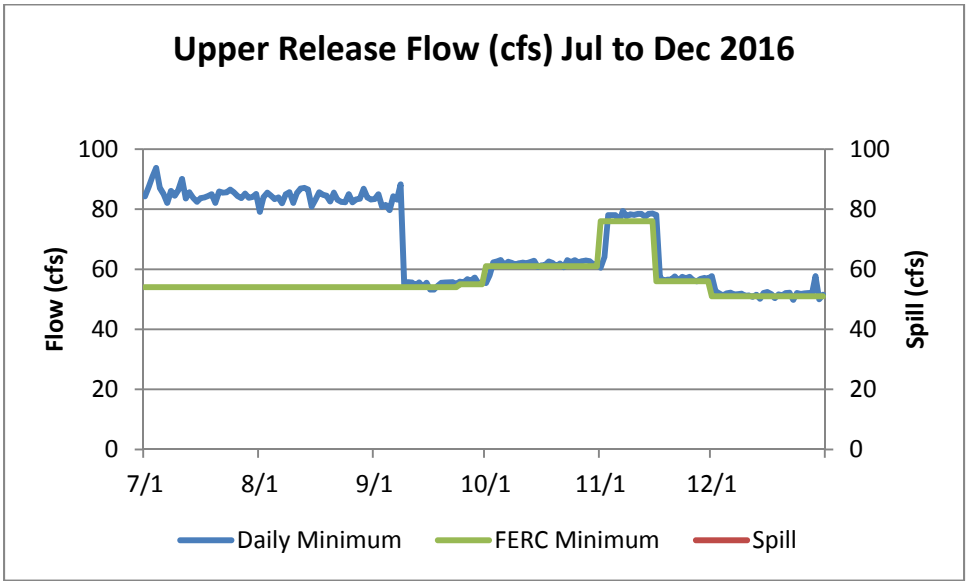


Figure 3. Daily Minimum Upper Release flows from July 1 to December 31, 2016.

Constructed Channel (SA 6.1.3b)

Beginning in fall 2011, a flow monitoring gage was installed at the Canal Drain outlet to provide a minimum flow alarm system and better flow measurement. The system is performing well and there were no true flow excursions recorded for 2016 (**Figure 4**). The two days in late April when flow appears to be zero were simply times when the communications were down but the valve setting was not altered. In the first 28 days in January, the flow monitor was once again swamped by a beaver dam that caused water to pool up behind it and cause a read failure. The dam was promptly removed once the problem was discovered.

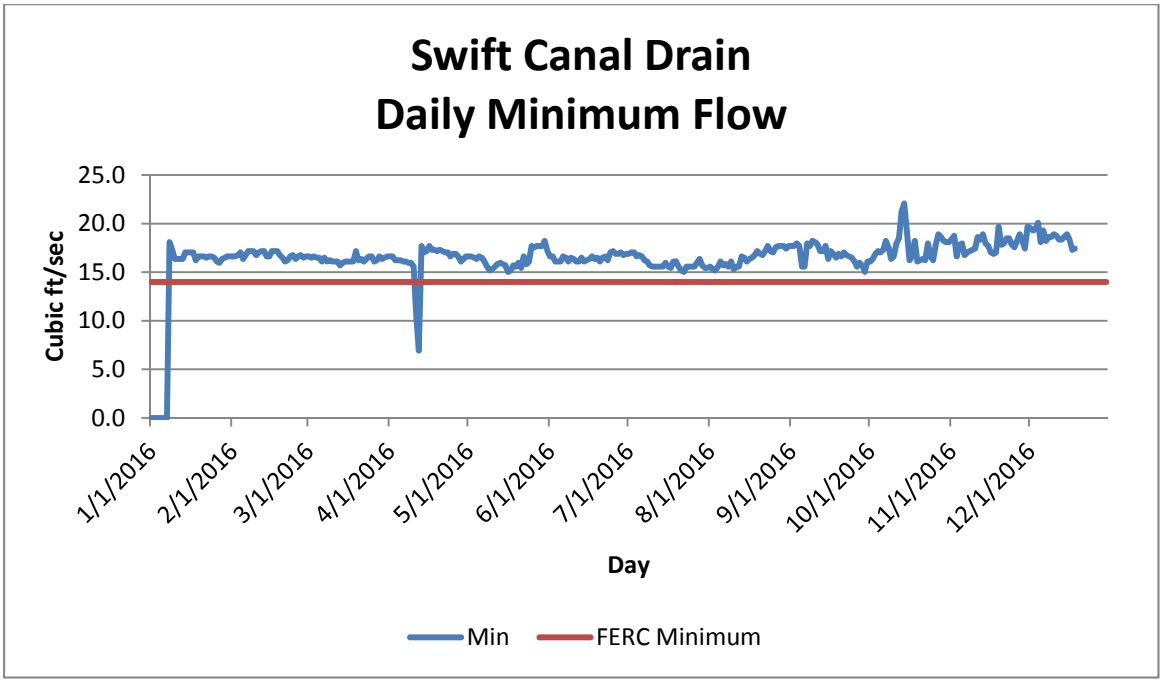


Figure 4. Flow discharged through the Canal drain and provided continuous water into the Constructed Channel during 2016 always exceeding the minimum requirement of 14-cfs with the exception of some read failures that gave false values.

Maintenance of the Constructed Channel (SA 6.1.3e)
As of December 31, 2016 all structures are in place and functioning.

3.2.19 SA Section 6.2 Flow Fluctuations and Ramp Rates below Merwin Dam

As described below, during calendar year 2016, flows for the Merwin Project were modified from those stipulated in the June 26, 2008 FERC license. In response to low snowpack in the 2015/2016 winter and persistent dry weather conditions flows were modified from June 4th at 11:30 am until June 30th at midnight. Minimum flow was reduced from 2,700 cfs to 2,300 cfs in order to preserve water for fall spawning flows. Flow modifications were agreed upon by the Lewis River Flow Coordination Committee (FCC).

There were no unplanned flow or ramp rate excursions below Merwin Dam in calendar year 2016.

3.2.20 SA Section 7.1 Large Woody Debris Program

PacifiCorp provided funding to the U.S. Forest Service, Fish First and Lower Columbia Fish Recovery Board for transporting logs for habitat enhancement projects in 2016. The remaining balance as of December 31, 2016 is $1,013.42.

3.2.21 SA Section 7.2 Spawning Gravel Study and Gravel Monitoring and Augmentation Plan

In 2006, PacifiCorp completed a Spawning Gravel Report for downstream of Merwin dam and proposed to monitor gravel movement for two years before making recommendations and developing a final gravel augmentation plan. A summary report was provided to the ACC December 20, 2007, regarding completion of two tasks for the Lewis River Spawning Gravel Evaluation. In 2008, the third year of mapping the spawning gravel areas and analyzing the accumulated data was completed. Some of the key findings were that spawning habitat is likely limiting to the local Chinook salmon population. Available spawning gravel does not appear to be diminished in the upper reach and the gravel appears to be stable. Adding more spawning

gravel would not necessarily increase the spawning area due to the effect of the confined canyon geomorphology.

PacifiCorp provided an annual report to the ACC and monitored the gravel sites in the fall of 2008 in order to provide more refinement to the model for gravel movement and an applicable trigger or gravel augmentation. A final report update and recommendations was submitted in January 2009. Per the assessment plan a recommended monitoring-trigger occurs when flows below Merwin exceed 42,000 cfs as measured at the Ariel gage. Since completion of the assessment report, flows of that magnitude have not occurred. The highest recent flow occurred in January 2010 at just over 37,000 cfs.

3.2.22 SA Section 7.3 Predator Study

A predator analysis was initiated as part of the New Information process and was reported in the document titled, *New Information Regarding Fish Transport into Lake Merwin and Yale Lake* which was provided by the USGS and University of Washington June 24, 2016 (PacifiCorp 2016).

3.2.23 SA Section 7.4 Habitat Preparation Plan

PacifiCorp's obligation under the Habitat Preparation Program for Swift Reservoir ended in 2012. Formal reintroduction of fish collected at Merwin Trap replaced the Habitat Preparation Program for all reintroduction species into Swift. The Habitat Preparation Program may be initiated at Merwin and Yale reservoirs pending the decision to reintroduce salmon and steelhead into those reservoirs.

3.2.24 SA Section 7.5 Aquatics Fund

PacifiCorp continues to annually make funds available for Aquatic resource projects in accordance with the *Aquatics Fund – Strategic Plan and Administrative Procedures*.

On September 2, 2016 the Licensees notified Settlement Agreement Parties, ACC, TCC and interested parties of the availability of Funds for the 2016/2017 funding cycle. The total amount available as of December 31, 2016 was $2,793,860.21 (see Section 7.0). The Licensees will continue to provide additional money to the Aquatic Fund on an annual basis as stipulated in the SA.

3.2.25 SA Section 7.6 In Lieu Fund

Implementation is to be determined by NOAA Fisheries and USFWS following the Services' evaluation of new information on fish passage at Merwin and Yale projects by year nine of the licenses. However, due to the complexity of this Settlement Agreement requirement, the decision has been delayed to August 24, 2017.

3.2.26 SA Section 7.7 Management of Aquatics Fund and In Lieu Fund

No funds were awarded for Aquatic habitat projects in 2016 due to the 2015/2016 moratorium. At the end of 2016, PacifiCorp's total available fund amount was $2,094,936.04 for Resource Projects and $698,924.17 for Bull Trout Projects.

Fund account information is provided in Section 7.0.

3.2.27 SA Section 7.8 Execution of Projects and Mitigation Measures

The following projects were funded in 2016:

- Lower Columbia Fish Enhancement Group
    - 2014 Haapa Habitat Enhancement Project - $40,000

3.2.28 SA Section 8.1 Hatchery and Supplementation Program

On December 20, 2010, the FERC issued an order approving the *Hatchery and Supplementation Plan*, which was originally submitted December 23, 2009. On January 22, 2015, the FERC issued an order approving the updated Lewis River Hatchery and Supplementation Plan that was submitted December 16, 2014.

3.2.29 SA Section 8.2 Hatchery and Supplementation Plan and Report

The Licensees have completed the H&S Annual Report for 2016 (See **Attachment E)**. Our target was to finalize the AOP in December 2016 and Licensees are currently working with the H&S Subgroup to finalize the working draft of the H&S Annual Operations Plan (AOP) in 2017. During the interim, implementation of the H&S monitoring activities will be guided by the existing working draft. This timeline was agreed to by the H&S Subgroup in early 2016. The Licensees will continue to schedule planning meetings to ensure that modifications to the AOP are drafted and approved.

3.2.30 SA Section 8.3 Anadromous Fish Hatchery Adult Ocean Recruit Target by Species

The development of a precise and acceptable methodology for calculation of ocean recruits is an ongoing process. PacifiCorp and their contractors began evaluating methods and identifying data acquisition concerns and needs. This work continued in 2015 and was presented as part of the Monitoring and Evaluation Plan update scheduled for completion by March 2017. NOTE: As part of the Hatchery and Supplementation Plan update, development of methods to calculate ocean recruits was moved to the Monitoring and Evaluation Plan to reduce redundancy between the two plans and because many of the objectives in the Monitoring and Evaluation rely on this estimate.

3.2.31 SA Section 8.4 Anadromous Fish Hatchery Juvenile Production

Juvenile production targets as provided in the H&S Plan have been met for 2016 with the exception of spring Chinook (See **Attachment E** of the Hatchery and Supplementation Program Annual Report).

3.2.32 SA Section 8.5 Supplementation Program

The Supplementation Program is included in the *Hatchery and Supplementation Plan* submitted to the FERC in December 2014. The Utilities have followed and met the provisions of this plan during 2016. The annual report of operations under this program is provided as **Attachment E**.

3.2.33 SA Section 8.6 Resident Fish Production

PacifiCorp and Cowlitz PUD funded the operation of the Lewis River Hatchery Complex to meet current FERC license obligations for resident fish production.

3.2.34 SA Section 8.7 Hatchery and Supplementation Facilities, Upgrades, and Maintenance

The Licensees have fulfilled their obligation with respect to SA Section 8.7 hatchery upgrades. The Licensees will continue to implement hatchery facility upgrades in collaboration with the hatchery managers, hatchery engineers and in Consultation with the ACC. The completion schedule for SA 8.7 upgrades was provided in Attachment E of the 2015 ACC/TCC Annual Report.

3.2.35 SA Section 8.8 Juvenile Acclimation Sites

PacifiCorp constructed the Muddy River and Clear Creek Acclimation Ponds in October 2013. The Lewis River ACC approved extending the Crab Creek project to a completion date of December 26, 2015. However, the project was completed by October 1, 2015. Unfortunately, the high flow event in December 2015 completely destroyed the Muddy River site and severely damaged the Crab Creek site. The Clear Creek site was also severely damaged and may or may not be removed depending a decision by the ACC in spring 2017. The US Forest Service is requiring the removal of the structures associated with the Muddy River site and the fate of the Crab Creek site also rests on a decision by the ACC in spring 2017. In addition, the US Forest Service is reviewing the current NEPA document for the acclimation pond sites to determine how to address a change from spring outplanting of acclimation fish to fall outplanting.

In 2016, approximately 29,900 acclimation spring Chinook were released in the upper basin upstream of Swift Reservoir from mid-September through mid-October. A full description of acclimation releases can be found in the Lewis River Fish Passage Program 2016 Annual Report (**Attachment G**).

3.2.36 SA Section 9.1 Monitoring and Evaluation Plan

On March 31, 2010, PacifiCorp provided a draft Monitoring and Evaluation (M&E) Plan to the ACC for review. After receiving comments, the M&E Plan was finalized and submitted to the FERC June 16, 2010. The FERC approved the final plan November 3, 2010. A 5-year update of the M&E Plan occurred during 2015-2016, and a final draft version was submitted to the ACC for a 90-day review period September 2, 2016. Based on discussions with NMFS and with concurrence from WDFW, PacifiCorp requested an Extension of Time request from the FERC and provided stakeholders an additional 45 day period to review the completed final draft of the M&E Plan. The document will be submitted to the FERC in 2017.

3.2.37 SA Section 9.2 Monitoring and Evaluation Related to Fish Passage

Implementation of the M&E Plan as it relates to anadromous reintroduction continued in 2016 and included monitoring of upstream and downstream migrants. Coho salmon and wild winter steelhead adults were available for transportation upstream so spawning surveys took place for these species. The spring Chinook return was very low so there were no adults available for transport to the upper watershed. In terms of fish passage, the 2016 Annual fish Passage report (Lewis River Fish Passage Program 2016 Annual Report) is included as **Attachment G**. This report specifically addresses Settlement Agreement sections 4.1.4 and 9.2.1 through 9.2.2.

Each year PacifiCorp handles and processes numerous ESA-listed fish species. As part of the NOAA Fisheries Biological Opinion, PacifiCorp is to use an Incidental Take Form provided

by NOAA Fisheries to report on species taken during the previous year of scientific activity. That report is included below.

Table 5. Aquatic species Incidental Take form for 2016.

ESU Species and population group if specified in your permit	Life Stage	Origin	Take Activity	Number of Fish Authorized For Take	Actual Number of Listed Fish Taken	Authorized Unintentional Mortality	Actual Unintentional Mortality	Evaluation Location	Evaluation Period
Lower Columbia River (LCR) Chinook	Juv.	NOR	Capture, Mark, Release	NA	53,404	0	0	NF Lewis River, WA	March 1 – June 30, 2016
LCR Chinook	Juv.	HOR	Capture, Mark, Release	NA	47	0	0	NF Lewis River, WA	March 1 – June 30, 2016
LCR Steelhead	Adult	NOR	Capture, Mark, Release	NA	29	0	0	NF Lewis River, WA	March 1 – June 30, 2016
LCR Steelhead	Adult	HOR	Capture, Mark, Release	NA	34	0	0	NF Lewis River, WA	March 1 – June 30, 2016
Oregon Coast Coho	Juv.	NOR	Capture, Mark, Release	NA	1,509	0	0	NF Lewis River, WA	March 1 – June 30, 2016
Oregon Coast Coho	Juv.	HOR	Capture, Mark, Release	NA	23,539	0	0	NF Lewis River, WA	March 1 – June 30, 2016
LCR Steelhead	Juv.	NOR	Capture, Mark, Release	NA	556	0	0	NF Lewis River, WA	March 1 – June 30, 2016
LCR Steelhead	Juv	HOR	Capture, Mark, Release	NA	9	0	0	NF Lewis River, WA	March 1 – June 30, 2016

3.2.38 SA Section 9.3 Wild Fall Chinook and Chum

Implementation of the fall Chinook monitoring that includes chum continued in 2015 per the M&E Plan approved by the FERC. NOTE: Fall Chinook and chum salmon monitoring activities and objectives in the lower Lewis River are now part of the Hatchery and Supplementation Plan as part of the updated plan approved by the FERC in January 2015.

3.2.39 SA Section 9.4 Water Quality Monitoring

See section 4.1.2 under Water Quality

3.2.40 SA Section 9.5 Monitoring of Hatchery and Supplementation Program

The FERC approval of the updated *Hatchery and Supplementation Plan* was provided January 22, 2015. Monitoring of the H&S program is the responsibility of the H&S subgroup created by the ACC. Each year, the H&S subgroup develops annual operating plans (AOP) to adaptively manage and implement components of the H&S Plan.

3.2.41 SA Section 9.6 Bull Trout Monitoring

PacifiCorp, on behalf of the Utilities, completed actions according to the *2016 Threatened and Endangered Species Annual Plan*. Results from activities performed and data obtained under SA Section 4.9.2 are provided in **Attachment C**, *Bull Trout 2016 Annual Operations Report.*

3.2.42 SA Section 9.7 Resident Fish Assessment

Given the spatial and temporal overlap of preferred spawning habitat and periodicity between coho and bull trout, there is concern that later spawning coho may superimpose redds over redds newly constructed by bull trout. To evaluate any superimposition, bull trout redd surveys were completed in Pine Creek tributary P8 in September and October. All identified bull trout redds were labeled by Global Positioning Satellite, as well as physically marked within the stream for ease of identification at a later date. Coho redd surveys were subsequently performed of the same stream in October and November to evaluate any redd superimposition by the two species. No coho redds were observed to be superimposed over bull trout redds in 2016. We will continue to watch for any encroachment of coho into critical spawning streams for bull trout.

This evaluation was not conducted within Cougar Creek in 2015 as no reintroduced anadromous species have yet been released into Yale Reservoir. Habitat Preparation Plan species were scheduled to be released into Yale Reservoir in 2016 but that was delayed pending decision on passage into Yale Lake.

Kokanee spawner abundance was evaluated within Yale Reservoir and estimates are included within the Yale Reservoir Kokanee 2016 Escapement Report located in **Attachment J**.

3.2.43 SA Section 9.8 Monitoring of Flows

Monitoring of Merwin flows and the Upper Release and the Constructed Channel flows has occurred on a continuous basis and will continue per the M&E Plan.

3.3 Aquatic 2017 Annual Plan

3.3.2 SA Section 4.2 Merwin Trap

Since the new trap was installed in December 2013 this section no longer applies.

3.3.3 SA Section 4.3 Merwin Upstream Collection and Transport Facility

A Merwin Upstream Collection and Transport Facility final design was submitted to the FERC in December 2009. PacifiCorp awarded a contract for construction and work began in March 2011. The new upstream collection and transport facility was considered substantially complete in April 2014. The intent of the modifications made to the existing collection facility at Merwin Dam were to provide safe, timely, and effective passage of adult salmonids being transported upstream.

The new facility is designed to be constructed in phases, offering the ability to incrementally improve fish passage performance (if needed) in the future to meet biological performance goals. Depending on the biological monitoring of the facility's performance (which began spring 2015), there are up to four additional phases that will increase flow into the fishway attraction pools, and add a second fishway with additional attraction flow, if necessary.

3.3.4 SA Section 4.4 Downstream Transport at Swift No. 1 Dam

PacifiCorp completed and submitted the final design for the Swift Downstream Facility in December 2009. PacifiCorp awarded a contract for construction and began the first construction phase in March 2011. Construction continued through most of this past year and the facility was put into service on December 26, 2012. PacifiCorp has purchased the land needed for the downstream Release Pond. Final designs were submitted to the FERC and approved. Construction of the Release Pond project, which is also subject to ESA consultation on construction, operation, and impacts to critical habitat for Eulachon smelt, and was delayed. Also, WDNR stepped forward and required a public land use permit which neared the final stages of completion in 2016.

Consequently, PacifiCorp has pushed construction into 2017. PacifiCorp worked with WDFW and the ACC to determine an alternate plan for releasing downstream migrants in 2013 until the Release Pond is completed. In October 2013, the ACC decided to allow for direct release of the downstream migrants at the Pekins Ferry boat launch as an interim measure until the Release Pond project is completed. This decision recognizes that the Overall Downstream Survival (ODS) component will not be measured until the Release Pond is put into operation.

The ACC approved an extension for completion until December 26, 2017 and the FERC approved that timing October 22, 2015.

3.3.5 SA Section 4.9 Interim Bull Trout Collection and Transport

PacifiCorp and Cowlitz PUD are to investigate alternative Bull Trout collection methods in consultation with ACC. The *2017 Bull Trout Annual Operations Plan* (**Attachment D**) has been incorporated into this Annual Report and submitted to the ACC including USFWS and NMFS in February 2017.

3.3.6 SA Section 5.2 Bull Trout Habitat Enhancement Measures

PacifiCorp will continue to manage the Cougar Creek Conservation Covenant and Cowlitz PUD will continue to manage the Devil's Backbone Conservation Covenant to benefit bull trout.

3.3.8 SA Section 5.7 Public Information Program to Protect Bull Trout

PacifiCorp will continue to provide flyers with the same information at recreation park entrance booths. The Utilities will also provide such flyers to enforcement personnel for distribution.

3.3.9 SA Section 6.1 Flow Releases in the Bypass Reach; Constructed Channel

PacifiCorp and Cowlitz PUD will continue to adhere to the Swift bypass reach and constructed channel flow release schedule specified in the 401 Water Quality certifications.

3.3.10 SA Section 6.2 Flow Fluctuations below Merwin Dam

PacifiCorp will continue to implement the operational flow regimes as identified in the SA and the Merwin FERC License.

3.3.11 SA Section 7.1 Large Woody Debris Project

PacifiCorp will continue to maintain the available funds in a Tracking Account per the SA to help defray the costs of LWD transport.

3.3.12 SA Section 7.2 Spawning Gravel Study and Gravel Monitoring and Augmentation Plan

Periodic monitoring will continue pursuant to determining the need for gravel supplementation.

3.3.13 SA Section 7.4 Habitat Preparation Plan

PacifiCorp's obligation under the Habitat Preparation Program for Swift Reservoir ended in 2012. Formal reintroduction of fish collected at Merwin Trap replaced the Habitat Preparation Program for all reintroduction species. The Habitat Preparation Program will again be initiated in 2017 for Yale Reservoir (5 years prior to proposed implementation of downstream collection facilities at Yale Dam) pending a decision on passage into Yale Lake.

3.3.14 SA Section 7.5 Aquatics Fund

Aquatics funding was reinitiated in 2016 following a moratorium and the ACC accepted two projects proposed by US Forest staff for implementation beginning in 2017.

Attachment K provides a copy of recent Lewis River Aquatic Fund Projects (SA 7.5.3.2) Project Closeout Reports, if any, which provides a summary of those aquatic fund projects completed as of December 31, 2016.

3.3.15 SA Section 8.2 Hatchery and Supplementation Plan

On January 22, 2015, the FERC issued an order approving the updated Lewis River Hatchery and Supplementation Plan that was submitted December 16, 2014. The utilities continue to develop annual operating plans with the H&S Subgroup to guide implementation and adaptively manage the H&S program based on the objectives contained in the updated H&S Plan.

3.3.16 SA Section 8.3 Anadromous Fish Hatchery Adult Ocean Recruit Target by Species

The development of a precise and acceptable methodology for calculation of ocean recruits is an ongoing process. PacifiCorp and their contractors developed methods to estimate Ocean Recruits and included these methods in the Monitoring and Evaluation Plan due to be issued in spring 2017. NOTE: As part of the Hatchery and Supplementation Plan update, development of methods to calculate ocean recruits was moved to the Monitoring and Evaluation Plan to reduce redundancy between the two plans and because many of the objectives in the Monitoring and Evaluation rely on this estimate.

3.3.17 SA Section 8.4 Anadromous Fish Hatchery Juvenile Production

Per the SA and the *Hatchery and Supplementation Plan* and depending on the adult returns of spring Chinook, the Licensees will provide for the production of spring Chinook salmon smolts, steelhead smolts, and coho salmon smolts at levels specified ("Juvenile Production").

3.3.18 SA Section 8.6 Resident Fish Production

Subject to Section 8.6.3, the Licensees will continue to provide for the production of 20,000 pounds of resident rainbow trout (to Swift reservoir) and 12,500 pounds of kokanee (to Merwin reservoir) each year following per the FERC licenses.

3.3.19 SA Section 8.7 Hatchery and Supplementation Facilities, Upgrades, and Maintenance

The Licensees have fulfilled their obligation with respect to SA Section 8.7 hatchery upgrades.

3.3.20 SA Section 8.8 Juvenile Acclimation Sites

With damages that occurred to the acclimation facilities caused by flood flows in December 2015, work will begin to permit deconstruction of the Muddy River in 2017. Discussion by ACC members regarding the fate of the Crab Creek and Clear Creek sites will take place in the spring of 2017. There will be a shortage of spring Chinook smolts for the second year in a row and the ACC will make a decision in 2017 as to whether or not any spring Chinook will be planted in the upper watershed or to release them downstream of Merwin dam.

3.3.21 SA Section 9.6 Bull Trout Monitoring

The Licensees will continue to monitor and evaluate bull trout populations in the Lewis River basin following approval of the Bull Trout Annual Operating Plan (AOP). Overarching long-term bull trout monitoring objectives were included within the FERC approved M&E Plan. Specific monitoring tasks, including methods and locations, will continue to be developed and included within the bull trout AOP and submitted to the USFWS and ACC annually.

3.3.22 Monitoring and Evaluation Post-Season Incidental Take

Each year PacifiCorp handles and processes numerous ESA-listed fish species. As part of the NOAA Fisheries Biological Opinion, PacifiCorp is to use an Incidental Take Form provided by NOAA Fisheries to report on species taken during the previous year of scientific activity. That report is included below.

ESU Species and population group if specified in your permit	Life Stage	Origin	Take Activity	Number of Fish Authorized For Take	Actual Number of Listed Fish Taken	Authorized Unintentional Mortality	Actual Unintentional Mortality	Evaluation Location	Evaluation Period
Lower Columbia River (LCR) Chinook	Juv.	NOR	Capture, Mark, Release	NA	53,404	0	0	NF Lewis River, WA	March 1 – June 30, 2016
LCR Chinook	Juv.	HOR	Capture, Mark, Release	NA	47	0	0	NF Lewis River, WA	March 1 – June 30, 2016
LCR Steelhead	Adult	NOR	Capture, Mark, Release	NA	29	0	0	NF Lewis River, WA	March 1 – June 30, 2016
LCR Steelhead	Adult	HOR	Capture, Mark, Release	NA	34	0	0	NF Lewis River, WA	March 1 – June 30, 2016
Oregon Coast Coho	Juv.	NOR	Capture, Mark, Release	NA	1,509	0	0	NF Lewis River, WA	March 1 – June 30, 2016
Oregon Coast Coho	Juv.	HOR	Capture, Mark, Release	NA	23,539	0	0	NF Lewis River, WA	March 1 – June 30, 2016
LCR Steelhead	Juv.	NOR	Capture, Mark, Release	NA	556	0	0	NF Lewis River, WA	March 1 – June 30, 2016
LCR Steelhead	Juv	HOR	Capture, Mark, Release	NA	9	0	0	NF Lewis River, WA	March 1 – June 30, 2016

4.0 WATER QUALITY

4.1 PacifiCorp Water Quality Measures Implemented in 2016

4.1.1 PacifiCorp Application for 401 Water Quality Certificate for Yale, Swift No. 1 and Merwin Hydroelectric Projects

On October 9, 2006, Ecology provided 401 Water Quality certificates for the Merwin, Yale, and Swift No. 1 hydroelectric projects. These 401 Certifications have subsequently been amended several times. Until the FERC issued licenses for the Lewis River Hydroelectric Project June 26, 2008, PacifiCorp Energy implemented those measures contained in the 401 Certifications that were not FERC license-specific, and has implemented all the 401 requirements since June 26, 2008.

4.1.2 SA Section 9.4 Water Quality Monitoring

The following section covers water quality monitoring activities performed in accordance with Ecology's Lewis River 401 water quality certifications. Some monitoring parameters are ongoing from previous years, such as Total Dissolved Gas (TDG) monitoring in Swift No. 1 and Yale tailraces; while other activities such as Merwin, Yale, and Swift forebay temperature profiles were implemented for the first time in 2007 and continued in 2016.

Per the 401 water quality certificates, monitoring of projects' spillway TDG levels continued through 2016. Tailrace TDG monitoring has been ongoing since 1995 and will continue per the direction of the 401 requirement. Until it is shown that a temperature issue does not exist, PacifiCorp will also continue to monitor water temperature in the forebays and tailraces of each project and, in cooperation with Cowlitz PUD, monitor water temperature in the Swift Bypass Reach.

2016 Total Dissolved Gas Analysis for Yale, Swift No. 1 and Merwin Hydroelectric Project Spills

Upon issuance of the 401 water quality certificates, PacifiCorp began monitoring of spillway TDG in the fall of 2006. Previous TDG monitoring sites near the Swift No. 1, Yale and Merwin spillways were reactivated at the beginning of the 2015/2016 high run-off period.

On December 9, 2015, the Lewis River experienced a high flow event that reached 90,594 cubic-feet-per-second (cfs) inflows at Merwin dam. Even though this was a particularly unusually high winter flow, the event only resulted in the Merwin Project spilling nearly 14,000 cfs for several days. The resultant total dissolved gas (TDG) levels exceeded 110% for most of the spill period but the event far exceeded the 7Q10 flow of 32,884 cfs. Consequently, the project was exempt from TDG exceedence.

During 2016 only 5 minor spill events (less than 4,000 cfs) occurred due to either a unit trip (in which case spill gates were opened to maintain Merwin minimum flow) or small storm events that filled Lake Merwin faster than anticipated. In all cases TDG in the Merwin tailrace did not exceed 110 percent. In 2016 neither the Yale project nor the Swift project had spill events.

Yale Tailrace TDG:
Total dissolved gas data in the Yale tailrace (**Attachment G**) were gathered hourly in 2016 using a HydroLab Series 5 miniSonde (MS5). A stainless steel tube is permanently attached to the Yale powerhouse wall and submerged to a depth of 15 feet. The HydroLab is deployed within this tube to protect the probe and maintain consistent depth at 15 feet. In 2016, 8,730 hourly data points were recorded in the Yale tailrace, of which no data points exceeded the state standard of 110% (**Attachment G**). Total dissolved gas levels greater than 110% have been observed in the past and are produced during times of motoring operations and at low generation levels. During times of normal generation, elevated levels of tailrace TDG are not typically observed.

During 2016, PacifiCorp continued evaluating measures at the Yale tailrace to control TDG during motoring operations. These measures include automated "flushing" of the tailrace periodically. Flushing is defined as ramping one unit to 5 MW for ten minutes. The frequency of this event depends on real-time dissolved gas measured in the tailrace with the MS5 and is fully automated through the Programmable Logic Control (PLC). This measure was first implemented October 20, 2007 and continues to be an effective procedure in reducing TDG levels in the Yale tailwaters.

In addition to flushing flows, automated air valves have been in place since 2009 to limit the volume of air entering the turbine throughout the operating range of each unit. This investment provides control of excessive TDG in the Yale tailwaters during normal operations of the units.

Swift No. 1 Tailrace TDG
TDG data (**Attachment H**) were gathered hourly in the Swift No. 1 tailrace using two HydroLab Series 5 minisondes (MS5). The second meter is used for comparison and quality control as well as determining if differences in TDG exist based on individual unit operation. Similar to the Yale tailrace, meters are deployed within steel tubes permanently attached to the powerhouse wall. Meter No. 1 is located between the draft tubes of Units 11 and 12 while Meter No. 2 is located between the draft tubes of Units 12 and 13. The meters gather data hourly from a water depth of 15 feet. Data between the two meters are averaged and provided in graphic form (**Attachment H**). Of the 8,754 data points collected in 2016, ninety-eight (98) data points exceeded the 110% state standard. Similar to Yale tailrace, data points greater than 110% are produced during times of project motoring operation or prolonged periods of inefficient operation between 20 and 40 MW per unit. During times of normal generation, elevated levels of TDG are not typically observed.

To reduce TDG within Swift No. 1 tailrace during periods of normal generation and load following operations, air intake modifications and automation were made in 2005 that limit the volume of air entering the units over their generation range based on a predefined air volume curve. This measure, while effective at normal generation levels, is not effective during

periods of motoring. If flushing procedures currently being evaluated at Yale continue to be effective, then this procedure will also be implemented at Swift No. 1 in 2017 to help alleviate remaining TDG issues. Modifications were made in late October 2012, to ensure that air entrainment would not be possible during periods of motoring operation. This programming change to the PLC should help alleviate elevated TDG levels during periods of motoring.

Swift No. 1 Forebay TDG

TDG data was gathered hourly in the Swift No. 1 forebay from February 7, 2008 to May 31, 2008 using a HydroLab Series 5 datasonde (DS5). The meter was deployed to a water depth of 15 feet from the dam intake deck via steel cable. During the period, 2,747 data points were recorded. Of those data points none were found to exceed 110% TDG saturation. Based on Table 2 in section 4.8 of the 401 water quality certification for the Swift No. 1 hydroelectric facility, TDG monitoring in the project forebay is "Ongoing if exceedances occur until three months after such exceedances are corrected". No exceedances were recorded in the four month monitoring period for the Swift No. 1 forebay, therefore monitoring activities were suspended as of May 31, 2008.

2016 Temperature Profiles for Merwin, Yale, and Swift No. 1 Forebays and Corresponding Temperature Comparison between Forebay Intake Depth and Tailrace For Each Project

Graphs representing forebay temperature profiles from the surface to reservoir bottom and graphs comparing forebay intake depth temperatures to the tailrace temperatures for Merwin, Yale, and Swift No. 1 during 2016 are included in **Attachment J, Attachment G** and **Attachment I**. Data points for forebay temperature profiles are two-week averages of hourly temperature readings taken at each specified depth.

Data points for intake depth/tailrace comparison were taken hourly from a depth of 15 feet in project tailraces, and at specified intake depth in project forebays. This hourly data was then converted to seven-day averages of the daily maximum temperature (7DADmax). Temperature data were gathered using Onset HOBO prov2 Temp Loggers®. Prior to deployment, each temperature thermograph was verified and calibrated using a National Institute of Standards and Technology (NIST) certified reference thermometer.

Yale

After the end of the monitoring season PacifiCorp attempted to download the Yale thermograph string and found the cable that the thermographs were attached to was missing. The cable was either tampered with or failed. There are no data available for temperatures in the Yale forebay for 2016.

The Yale tailrace 7DADmax temperature graph is presented in **Attachment G**. The tailrace temperatures are comparable to what has historically been observed, suggesting (despite missing forebay temp data) that 2016 forebay temperatures were likely comparable to historical forebay temperature conditions.

Swift No. 1

Temperature stratification was observed in Swift No. 1 forebay for the entire period of analysis May through October 2016 (**Attachment H**). The warmest two-week average temperature, 20.9°C, was observed in August two feet below the surface. The coldest observed temperature was 6.3°C and was recorded at a depth of 122 feet in May. In the past, thermograph strings were attached to a buoy, allowing temperature loggers to move with fluctuating reservoir levels; enabling the loggers to remain at designated water depths from the surface. In 2016 the Swift thermograph string was attached to a vertically fixed position due to construction activities in the forebay, temperature loggers could not be held at constant water depths. To address this issue, fluctuating reservoir levels were correlated to each temperature loggers fixed elevation. Bi-weekly average logger depths were calculated and assigned to corresponding bi-weekly average temperatures.

Hourly temperature readings were taken from the Swift No. 1 tailrace from a depth of 15 feet using HydroLab Series 5 miniSonde. Hourly temperatures were then converted to 7DADmax readings in order to get an intake depth temperature to tailrace temperature comparison per the direction of the 401 certification (**Attachment H**). Many different environmental factors influenced the intake depth to tailrace water temperature comparison, namely; reservoir elevations, powerhouse operations, configuration of the water withdrawal system, and placement of the forebay thermistors.

The bathymetry of Swift Reservoir in the vicinity of the penstock intakes is unusual. Instead of the entrance of the intakes lying on the reservoir bottom, drawing water from all angles, they are at the downstream end of a deep and narrow trench notched into the hillside during construction of the dam. The intakes influence the mixing of stratified water columns as they draw water through the trench. It is difficult to deploy thermographs that spatially align and represent the temperature regime occurring near the intake (**Attachment H**).

Merwin

As in prior years, temperature stratification was observed in Merwin Reservoir from May through October 2016, with the reservoir getting progressively warmer until turn-over in the latter half of October (**Attachment I**). The coldest two-week temperature average, 7.4°C, was recorded in May at intake depth of 178 feet. The warmest two-week average temperature was 21.9°C at the reservoir surface in August. Since PacifiCorp considers the reservoir conditions as baseline, there were no observed temperature exceedances for Merwin Reservoir in 2016.

An Onset HOBO Pro v2 Temp Logger® temperature recorder was positioned within the Merwin tailrace at a depth of approximately 15 feet and hourly temperature recordings were taken for the duration of 2016 (**Attachment I)**. Hourly readings were converted to seven-day averages of the daily maximum temperature (7DADmax). During the June 15 through September 15 time period, fourteen 7DADmax data points were recorded and zero were observed to be greater than the state standard of 16° C. During the Jan 1 through June 14 and September 15 to December 31 time frames; forty-five 7DADmax data points were recorded. Of these, seven were observed to be greater than the state standard of 13° C (**Attachment I**). 7DADmax temperatures over 13° C were first observed in the project tailrace during the third week of September and persisted until the first week of November, which are consistent with

tailrace temperature patterns of 2016. PacifiCorp will continue to monitor this condition through the pending Water Quality Temperature Attainment Plan (WQTAP).

2016 Dissolved Oxygen Comparison between Merwin Forebay Intake Depth and Merwin Tailrace in September and October

Hourly dissolved oxygen levels in milligrams per liter (mg/l) were measured in the Merwin forebay at an approximate depth of 160 feet and in Merwin tailrace at an approximate depth of 15 feet from September through October 2016 (**Attachment I**). Measurements in the forebay were recorded with a HydroLab Series 5 datasonde (DS5) and with a HydroLab Series 5 miniSonde (MS5) in the project tailrace.

During the period of analysis, 969 hourly data points were recorded in the project forebay. Since PacifiCorp considers reservoir conditions as baseline, there were no recorded deviations from the State Standard. The minimum dissolved oxygen level observed in Merwin forebay was 4.6 mg/l October 14, 2016. The Merwin Tailrace DO meter experienced several malfunctions during the monitoring period, consequently, only 167 dissolved oxygen data points were recorded in the Merwin tailrace (**Attachment I**). Of these 167 data points, 38 were less than 9.5 mg/l. The minimum dissolved oxygen level observed in the Merwin tailrace was 8.57 mg/l, recorded October 14, 2016. Looking at the data trends it is estimated the tailrace DO was below the 9.5 mg/L standard from approximately September 1, 2016 through October 16, 2016.

2016 Temperature Comparison in the Swift Bypass Reach between Waters Upstream and Downstream of the mouth of Ole Creek

In 2016, 8,784 corresponding hourly temperature readings were taken of the Swift Bypass Reach both 50 feet upstream and downstream of the Ole Creek confluence. These hourly data points were converted to 7DADmax values (**Attachment G**). Temperatures were recorded using Onset HOBO pro v2 Temp Loggers®. During the entire sampling time-frame when comparison was available, the downstream reading was slightly cooler than upstream. Data suggests that Ole Creek seems to have an overall cooling effect on the Swift Bypass Reach.

2016 Redd and Biological Surveys of the Lewis River Bypass Reach, Upper Release Point and Canal Drain Constructed Channels.

In compliance with section 4.2(10)(a) and 4.2(11) of the Washington Department of Ecology issued 401 Water Quality Certificate for Swift 1 Hydroelectric Project, PacifiCorp will conduct quarterly biological surveys and bi-weekly redd surveys (during Sept. 15th- Nov. 15th) of the Lewis River Bypass Reach, Upper Release Point and Canal Drain Constructed Channels on a set schedule as stipulated within Section 4.2(10)a-e) of the 401 Water Quality Certificate.

According to the schedule defined within section 4.2(10)(a-e) of the 401 Water Quality Certificate, PacifiCorp was not required to perform any biological or redd surveys of the Lewis River Bypass Reach, Upper Release Point or Canal Drain Constructed Channels in 2016.

4.2 PacifiCorp Water Quality 2017 Annual Plan

PacifiCorp will implement the following water quality measures in 2017.

4.2.1 Water Quality Management Plan

Implement an Ecology-approved Water Quality Management Plan (WQMP) describing how PacifiCorp will meet the terms of the 401 Water Quality Certificate. An updated WQMP was approved by Ecology September 20, 2013. PacifiCorp has been implementing the monitoring portions of the WQMP since the license was issued in 2008.

4.2.2 Flow Monitoring

PacifiCorp will continue to monitor flows in the Swift bypass reach (Upper Release flow and Constructed Channel flow) and flow/ramp rates downstream of Merwin dam.

4.2.3 Bypass Reach Gravel Replacement

PacifiCorp and Ecology met onsite at the Swift project Bypass reach to view gravel conditions following the December 2015 high flow event. That event resulted in spill exceeding 10,000 cfs that completely scoured the replaced spawning gravel out of the channel. Based on this occurrence and other spill events in the past, Ecology provided PacifiCorp a determination dated December 14, 2016 to cease gravel augmentation at the Bypass Reach until further notice.

4.2.4 Yale Tailrace Temperature Attainment Plan

Implement Yale Tailrace Temperature attainment plan as proposed in the final WQMP approved by Ecology.

4.2.5 Swift and Merwin Spill TDG Attainment Plan

Implement Merwin Spill TDG Attainment Plan as proposed in the final WQMP approved by Ecology.

4.2.6 Lewis River Project Temperature Model

The model was completed and a report was submitted in 2015.

4.2.7 Yale-Swift Turbine TDG Attainment Plan

Continue implementation and monitoring of Turbine TDG attainment plan for the Yale and Swift projects. A copy of the attainment plan is included in the final WQMP. However, since PacifiCorp has been able to demonstrate compliance with TDG standards related to turbine operation at the Yale and Swift plants, Ecology has removed these sites from the 303(d) list of sites requiring a Total Maximum Daily Load (TMDL) procedure.

4.3 Cowlitz PUD Water Quality Measures Implemented as of the End of 2016

On October 9, 2006, Ecology issued a Clean Water Act Section 401 Certification (Order No. 3676) to Cowlitz PUD for the continued operation of the Swift No. 2 Hydroelectric Project under a new FERC license (Ecology 2006). The Section 401 Certification, as amended[8,9,10,11], includes a number of conditions and general requirements directing Cowlitz PUD to comply with applicable water quality standards codified in 173-201A WAC. As of December 31, 2016, Cowlitz PUD has completed all of the requirements in the 401 Certification.

This section of the 2016 Annual Report lists the completed measures. Additional Settlement Agreement and amended Section 401 Certification requirements relating to instream flows, the constructed channel, gravel augmentation, salmonid monitoring, and water temperature monitoring in the Lewis River bypass reach are implemented together with PacifiCorp.

4.3.1 Swift No. 2 Project Water Temperature Monitoring

The water temperature monitoring program in the Swift No. 2 canal and forebay was completed in 2012 and fully satisfied the requirement of the amended Section 401 Certification to monitor a total of 10 qualifying periods. Final results were included in the 2012 Annual Report (PacifiCorp and Cowlitz PUD 2013).

4.3.2 Swift No. 2 Project Tailrace Water Quality Monitoring

On August 15, 2013, with Ecology's written approval, Cowlitz PUD discontinued water quality monitoring in the Swift No. 2 tailrace. Final results of this monitoring were included in the 2013 Annual Report (PacifiCorp and Cowlitz PUD 2014).

4.3.3 Swift No. 2 Tailrace Total Dissolved Gas (TDG) Monitoring (401) Certification Section 4.8.3

The initial Water Quality Certification Section 4.8.3 study was completed in 2008 and included in the 2008 Annual Report.

In September 2014, Cowlitz PUD replaced the original (1956) air intake valves for both turbines (Unit 21 and Unit 22) with new automated air intake valves. This modification triggered additional monitoring in 2014. Consistent with 401 Water Quality Certification Sections 4.3.4 and 4.8.3, Cowlitz PUD monitored TDG in the Swift No. 2 forebay and tailrace from June 24 to November 20, 2014. Final results of this monitoring were included in the 2014 Annual Report (PacifiCorp and Cowlitz PUD 2015).

[8] http://www.ecy.wa.gov/programs/WQ/ferc/existingcerts/order3927.pdf
[9] http://www.ecy.wa.gov/PROGRAMS/wq/ferc/existingcerts/swift2amend2.pdf
[10] http://www.ecy.wa.gov/PROGRAMS/wq/ferc/existingcerts/swift2amend3.pdf
[11] http://www.ecy.wa.gov/programs/wq/ferc/draftcerts/CowlitzCntyPUDAmendOrder8832toOrder3676-110711.pdf

4.3.4 Swift No. 2 Surge Arresting Structure Total Dissolved Gas (TDG) Monitoring (401) Certification Section 4.3.5 as amended

The TDG study required in Certification Section 4.3.5, as amended, was completed in 2007 and included in the 2007 Annual Report.

4.3.5 SA Section 9.4 Water Quality Monitoring

Ecology approved the Swift No. 2 Water Quality Management Plan September 20, 2013.

4.4 Cowlitz PUD Water Quality 2017 Annual Plan

Cowlitz PUD will implement the following water quality measures in 2016.

4.4.1 Water Quality Management Plan

Cowlitz PUD has completed all monitoring required under the Water Quality Management Plan. No future monitoring is anticipated unless an operational change triggers additional monitoring as required in the 401 Certification Order as amended.

Lewis River – 2016, Photo courtesy of USDA Forest Service

5.0 TERRESTRIAL RESOURCES

5.1 TCC Meetings

The purpose and role of the TCC, as defined in Section 14.1 of the Settlement Agreement, is to facilitate coordination and implementation of the Terrestrial PM&E measures.

The structure and process of the TCC is intended to provide a forum to address time-sensitive matters, early warning of problems, and coordination of member organization actions, schedule, and decisions to save time and expense. The TCC makes decisions based on consensus, while implementing the Settlement Agreement.

5.1.1 Meetings and Conference Calls: Overview

This section summarizes major items discussed at TCC meetings during the 12-month reporting period. Detailed meeting summaries are provided on the PacifiCorp website at: http://www.pacificorp.com/es/hydro/hl/lr.html# - TCC > 2016

- The TCC agreed to approve 10.3.3 Lewis River funding in the amount of $16,500 to fund the WDFW Eagle Island Restoration project for the noxious weed mowing and replanting project.

- On February 10, 2016 the TCC reviewed proposed budgets and project overviews for PacifiCorp's 2015 Wildlife Habitat Management Plans (WHMP) Annual Report and the Utilities WHMP 2016 Annual Plans for its 30-day review period.

- The 2015 Draft ACC/TCC Annual Report was distributed for its 30-day review and comment period March 2, 2016.

- On March 9, 2016 the TCC attendees toured Hanley-Curry Meadows and Unit 19, a proposed 2016 forest management area.

- On April 13, 2016 PacifiCorp conducted a field tour of Unit 8, a proposed 2016 harvest site and Unit 5, a 2015 completed forest management area.

- The TCC agreed to cancel the May 2016 meeting and reconvene June 8, 2016.

- On June 8, 2016 PacifiCorp conducted a field tour of timber harvest area Unit 35 and Unit 19 road layout. The TCC agreed to the proposed harvest and proposed road as detailed within the June 8, 2016 meeting notes and the 2016 WHMP Annual Plan.

- On July 13, 2016, after public comment opportunity the TCC agreed to continue with the 2016 WHMP actions in McKee Meadows as written. The TCC agreed to proceed with McKee Meadow 2016 management actions without change.

- The TCC agreed to PacifiCorp proceeding with the 160773 timber harvest buffer area as requested to include the 2-day osprey observation period.

- The TCC agreed to cancel the August 2016 meeting and reconvene September 14, 2016.

- On September 14, 2016 PacifiCorp conducted a field tour of Unit 15 timber harvest area and meadow, Buncombe Hollow orchard and meadow and the Cowlitz PUD interconnect project at Merwin Substation.

- The TCC agreed to place the Merwin Substation funds into the SA 10.3 Lewis River Fund if acceptable to PacifiCorp management or if a separate tracking account will be needed.

- On October 12, 2016 PacifiCorp conducted a field tour to Upper McKee and Lower McKee meadows.

- The TCC agreed to cancel the November 2016 meeting and reconvene December 14, 2016.

- On December 14, 2016 the TCC agreed to allow modification of the pond operations for PacifiCorp to pull the stop logs (boards) and the pond will draw down to its lowest level for all of 2017.

5.1.2 Meeting Notes

The Licensees prepared draft notes for TCC meetings and conference calls. These notes were distributed to TCC members for review and comment approximately one week after the subject meeting. After review, revision and approval by the TCC, the final notes were entered in the public record and posted on the PacifiCorp web site at:
http://www.pacificorp.com/es/hydro/hl/lr.html# - TCC > 2016

5.2 PacifiCorp Terrestrial Measures Implemented as of the End of 2016

This section presents the actions taken during January 2016 through December 2016 toward PacifiCorp terrestrial requirements in the Lewis River Settlement Agreement. It also includes previously completed Settlement Agreement actions. **Attachment M** provides a copy of the *Lewis River Wildlife Habitat Management Plan Annual Report*, which provides a summary of the terrestrial protection, mitigation, and enhancement measures that were implemented in this area during 2013. In addition, PacifiCorp implements road and culvert maintenance that is

required under the Forest Practices Act (Chapter 222-24 WAC, or current Forest Practice Rules) and these are described in **Attachment N**.

A discussion of the activities associated with each of the measures is presented by SA Article for the report period. A description of funding amounts deposited and disbursed during 2016 is provided in Section 7.0 – Funding.

5.2.1 SA Section 10.1 Yale Land Acquisition and Habitat Protection Fund

PacifiCorp completed its settlement agreement and the FERC license commitment under the Yale Land Acquisition Fund for acquiring land in 2010 with the purchase of 490 acres (198.3 ha) of land near Saddle Dam.

5.2.2 SA Section 10.2 Swift No. 1 and Swift No. 2 Land Acquisition and Habitat Protection Fund

PacifiCorp did not acquire any lands under the Swift No. 1 and Swift No. 2 Fund in 2015. On December 26, 2016 PacifiCorp contributed $645,083.00 to the fund per the Settlement Agreement schedule. As of December 31, 2016 the fund is now at $3,354,777.55

Because of confidentialities in acquiring other lands, specific discussion is not included in this annual report other than to indicate that opportunities continue to be discussed.

5.2.3 SA Section 10.3 Lewis River Land Acquisition and Habitat Protection Fund

As of December 31, 2016 the fund is now at $1,129,386.89.

5.2.4 SA Section 10.4 Transaction Costs

There were no transaction costs in 2016 using the Swift No. 1 and Swift No. 2 Land Acquisition and Habitat Protection Funds.

5.2.5 SA Section 10.5 Management of Funds

PacifiCorp made interest contributions to Swift No. 1 and Swift No. 2 Land Acquisition and Habitat Protection Funds in 2016. The Funds continue to be tracked in an account and is inclusive of accrued interest pending any transactions (see Section 7.0).

5.2.6 SA Section 10.6 Completed Implementation Advanced Purchases

As identified in the Settlement Agreement article 10.6.2, PacifiCorp acquired 770 acres (in 2000) of wildlife habitat near Cougar and Panamaker Creeks and established a 213 acre conservation covenant on those lands for the protection of bull trout. Routine maintenance of culverts, existing road closures, forestry management assessments, and invasive plant species control continued in 2016.

5.2.7 SA Section 10.7 Conservation Easements

PacifiCorp continued management of the 16 acres of land managed under a conservation easement with the Cowlitz Indian Tribe. These lands were treated (herbicide spraying) for invasive scotch broom control in a meadow area. The Cowlitz Tribe also hand-pulled scotch broom in the 2011 timber harvest area.

PacifiCorp continued inspections of a vegetation exclosure established on this easement for purposes of monitoring forage establishment and use by wildlife. Ocular assessments of vegetation within the exclosures and the surrounding area will be conducted for another 7 years by PacifiCorp biologists to assist in determining success of program treatments. Forage establishment as a result of the 2011 forest management actions and subsequent seeding has been successful especially in terms of releasing understory shrubs from excessive shade. Wildlife use in the conservation easement area is evidenced from browsing, grazing and deer or elk pellet groups throughout the easement.

5.2.8 SA Section 10.8 Wildlife Habitat Management Plan

PacifiCorp completed the WHMP and submitted it to the FERC December 23, 2008. The Utilities each received a FERC approval for their respective WHMP's May 29, 2009.

Article 403 of the Merwin, Yale, and Swift No. 1 licenses and Section 14.2.6 of the Settlement Agreement directs PacifiCorp to prepare and file with the FERC a detailed Annual Report (Federal Energy Regulatory Commission 2008a, 2008b, and 2008c, PacifiCorp et al. 2004). **Attachment M** provides a copy of the *Lewis River Wildlife Habitat Management Plan 2016 Annual Report*.

5.3 PacifiCorp

Terrestrial 2017 Annual Plan

This section presents PacifiCorp's Terrestrial Resources Annual plan which identifies planned 2012 activities as organized by the Settlement Agreement measures.

5.3.1 SA Section 10.2 Swift No. 1 and Swift No. 2 Land Acquisition and Habitat Protection Fund

PacifiCorp will continue work initiated in 2012 in coordination with the TCC regarding the acquisition of interests in land in the vicinity of Swift Reservoir. Fund account information is provided in Section 7.0.

5.3.2 SA Section 10.3 Lewis River Land Acquisition and Habitat Protection Fund

The Lewis River Fund had contributions of $1,580,429.64 in 2010 that were committed to the Yale land purchase (Saddle Mountain) in 2010 to make up for the shortfall of the Yale Funds. The Lewis River Fund was to be funded by six months following the sixth year of the FERC licenses for Yale and Swift No. 1 Projects, or by December 26, 2014. On December 26, 2014 PacifiCorp contributed $1,081,461.79. No acquisitions took place in 2016. The TCC has committed to use these funds in conjunction with Swift No. 1 and Swift No. 2 Land Acquisition and Habitat Protection Funds to acquire lands above Swift Reservoir should they become available. As of December 31, 2016 the fund is now at $1,129,386.89.

5.3.3 SA Section 10.4 Transaction Costs

Transaction costs incurred in 2016 will be managed in accordance with SA language and reported in the 2016 Annual Report.

5.3.4 SA Section 10.5 Management of Funds

Funds provided by PacifiCorp in 2016 will be managed in a tracking account and in accordance with SA language. Contribution amounts and interest gained will be identified in the 2017 Annual Report. See Fund account information provided in Section 7.0 for end of 2016 amounts.

5.3.5 SA Section 10.6 Completed Implementation Advanced Purchases

PacifiCorp will continue to manage the Cougar Creek Conservation Covenant lands and the company lands on the Swift Creek Arm for the long-term benefit of fish, wildlife, and native plants. These lands are managed under the WHMP as described in SA 10.8.

5.3.6 SA Section 10.7 Conservation Easements

Guidelines for the selection and acquisition of conservation easements will be considered in the acquisition of Interests in Lands to be purchased with Funds described in SA 10.1 through 10.3.

5.3.7 SA Section 10.8 Wildlife Habitat Management Plans

The 2017 Annual Plan fulfills PacifiCorp's obligations for the license's Article 403 and Settlement Agreement 10.8.3 and is provided in **Attachment L**. The plan details the terrestrial protection, mitigation, and enhancement measures to be implemented on PacifiCorp WHMP lands in the following year (i.e., January 1 to December 31, 2017).

5.3.8 SA Section 10.8.5.5 Mitigation for Impacts on Wildlife Habitat

Following consultation with the TCC and PacifiCorp Transmission & Distribution (T&D) operations, PacifiCorp proposed a WHMP lands strategy to mitigate the adverse impacts due to the Cowlitz PUD Interconnect Project. The TCC and PacifiCorp T&D agreed to a financial obligation of $10,172.00 (does not accrue interest), which PacifiCorp will account for in a separate funding account, See Section 7.0, Funding. These funds may be used to acquire additional WHMP lands and/or implement management or monitoring on WHMP lands.

5.4 Cowlitz PUD Terrestrial Measures Implemented in 2016

5.4.1 SA Section 10.6 Completed Implementation: Advance Purchases [Devil's Backbone Conservation Covenant]

Cowlitz PUD managed the Devil's Backbone Conservation Covenant to benefit bull trout.

5.4.2 SA Section 10.8.1 Development of the Wildlife Habitat Management Plan (WHMP)

Cowlitz PUD filed the Swift No. 2 WHMP with the FERC December 23, 2008. The FERC issued an Order Modifying and Approving Habitat Management Plan March 31, 2009. The FERC's Order approved the WHMP and added the following requirements:

- file an Annual Habitat Management Report by April 30 of each year; and
- in the event changes are made to the WHMP, file these changes with the Commission and the TCC.

This Section 5.4 fulfills Cowlitz PUD's obligation to file WHMP Annual Report.

5.4.3 SA Section 10.8.2 WHMP Fund

On December 26, 2015, Cowlitz PUD made $18,214 available for Year 8 2016 WHMP activities, $6,740 in carry forward and $461 in interest earned from 2015 for a total of $25,415. Table 2.1-1 in the March 15, 2016, Year 8 2016 WHMP Annual Plan included a list of proposed actions and estimated costs based on the 2016 budget. The numbers in Table 2.1-1 for the estimated cost of management activities in the 2016 (Year 8) Annual Plan were transposed, and the errors have been corrected in this report. **Table 5a** below illustrates the 2016 Budget, including estimated costs, year-end costs and the difference between the two. At year end, $14,278 remained in the budget, as itemized in **Table 5b**. **Table 6** provides the WHMP Tracking Account summarizing the WHMP budget and expenditures for each year.

Table 5a. Cowlitz PUD WHMP Year 8 2016 Budget.

WHMP Activity	2016 Budget	2016 Actual	Difference
Administration	$ 5,000	$ 512	$ 4,488
Annual inspection to monitor and manage public access	$0	$ 0	$ 0
Invasive plant surveys at high priority sites	$ 3,600	$ 2,708	$ 892
Invasive Species Control	$ 3,000	$ 1,542	$ 1,458
2016 Timber Management Fund	$ 6,375	$ 0	$ 6,375
Estimated cost of management activities	**$17,975**	**$ 4,762**	**$ 13,213**
Estimated amount remaining in 2016 Budget at year end	$ 7,440	$ 20,653	$ 13,213
Total	**$ 25,415**	**$ 25,415**	

Table 5b. Cowlitz PUD WHMP Year 8 2016 Carry Forward

Carry Forward		Running Total
2015 Timber Fund Carry Forward	$ 7,441	$ 7,441
2016 Timber Fund Carry Forward	$ 6,375	$ 13,816
2016 Amount Remaining at Year-End Not Including Timber Funds	$ 14,278	$ 28,094

Table 6. Cowlitz PUD WHMP Tracking Account.

Year	Year Beginning Date	WHMP Beginning Balance	WHMP Annual Payment at Year Beginning	WHMP Beginning Balance + Annual Payment	WHMP Funds Dispersed at Year End	Year End WHMP Funds Remaining	Interest Accrued Year End WHMP Funds	WHMP Ending Balance	Year End Date	WSJ Prime Rate Apr 1
1	26-Dec-2008	$ -	$ 16,321	$ 16,321	$ 18,855	$ (2,535)	$ -	$ (2,535)	26-Dec-2009	0.0325
2	26-Dec-2009	$ -	$ 16,659	$ 16,659	$ 18,230	$ (1,571)	$ -	$ (1,571)	26-Dec-2010	0.0325
3	26-Dec-2010	$ -	$ 16,773	$ 16,773	$ 12,822	$ 3,951	$ 128	$ 4,080	26-Dec-2011	0.0325
4	26-Dec-2011	$ 4,080	$ 16,959	$ 21,039	$ 7,949	$ 13,091	$ 425	$ 13,516	26-Dec-2012	0.0325
5	26-Dec-2012	$ 13,516	$ 17,408	$ 30,924	$ 31,094	($ 170)	$-	($ 170)	26 Dec-2013	0.0325
6	26 Dec-2013	$-	$ 17, 715	$ 17,715	$14,530	$3,185	$103	$3,288	26 Dec-2014	0.0325
7	26 Dec-2014	$ 3,288	$ 17,971	$ 21, 259	$ 7,078	$ 14,181	$ 461	$ 14,642	26 Dec-2015	0.0325
8	26 Dec-2015	$ 14,462	$ 18,214	$ 32, 856	$4,762	$28,094	$983	$29,077	26 Dec-2016	0.0350
9	26 Dec-2016	$ 29,077	$18,488	$47,565						

In 2016, Cowlitz PUD completed the 2016 WHMP Annual Report without charge as an in-kind service. On December 26, 2016, the WHMP fund included $28,094 in unspent funds, which generated $983 interest. On December 26, 2016, Cowlitz PUD made $18,488 available for the Year 9 2017 WHMP activities. Therefore, the total available for the Year 9 2017 WHMP is $47,565.

5.4.4 SA Section 10.8.3 Management of the Plan [Implementation of the Annual Plan]

After consultation with the TCC, Cowlitz PUD filed the Swift No. 2 Year 8 2016 WHMP Annual Plan with the FERC March 15, 2016. Specific wildlife management activities implemented under the Year 8 2016 Annual Plan are described in the following sections.

5.4.4.1 Invasive Plant Surveys

The invasive plant surveys are designed to focus on areas identified in the WHMP as high priority due to 1) known concentrations of invasive plants; 2) presence of ecologically sensitive resources, such as wetlands; or 3) soil disturbance or traffic that could pose a risk of introduction or spread of invasive plants. Surveys do not cover the transmission line right of way (ROW) or revegetated habitat south of the maintenance road, because these areas are treated under on-going operation and maintenance programs separate from the WHMP.

The surveys are conducted according to standard operating procedures (SOPs) outlined in the WHMP (Section 5.8, Invasive Plant Management SOPs). Survey routes are documented using a hand-held GPS unit, and the boundaries of new survey areas are flagged. GPS data points are transferred into the project GIS and used to prepare maps of areas surveyed or selected for weed treatment. **Figures 5 and 6** illustrate weed survey areas that have been delineated in the Devil's Backbone and Project Works management units (MUs) to date.

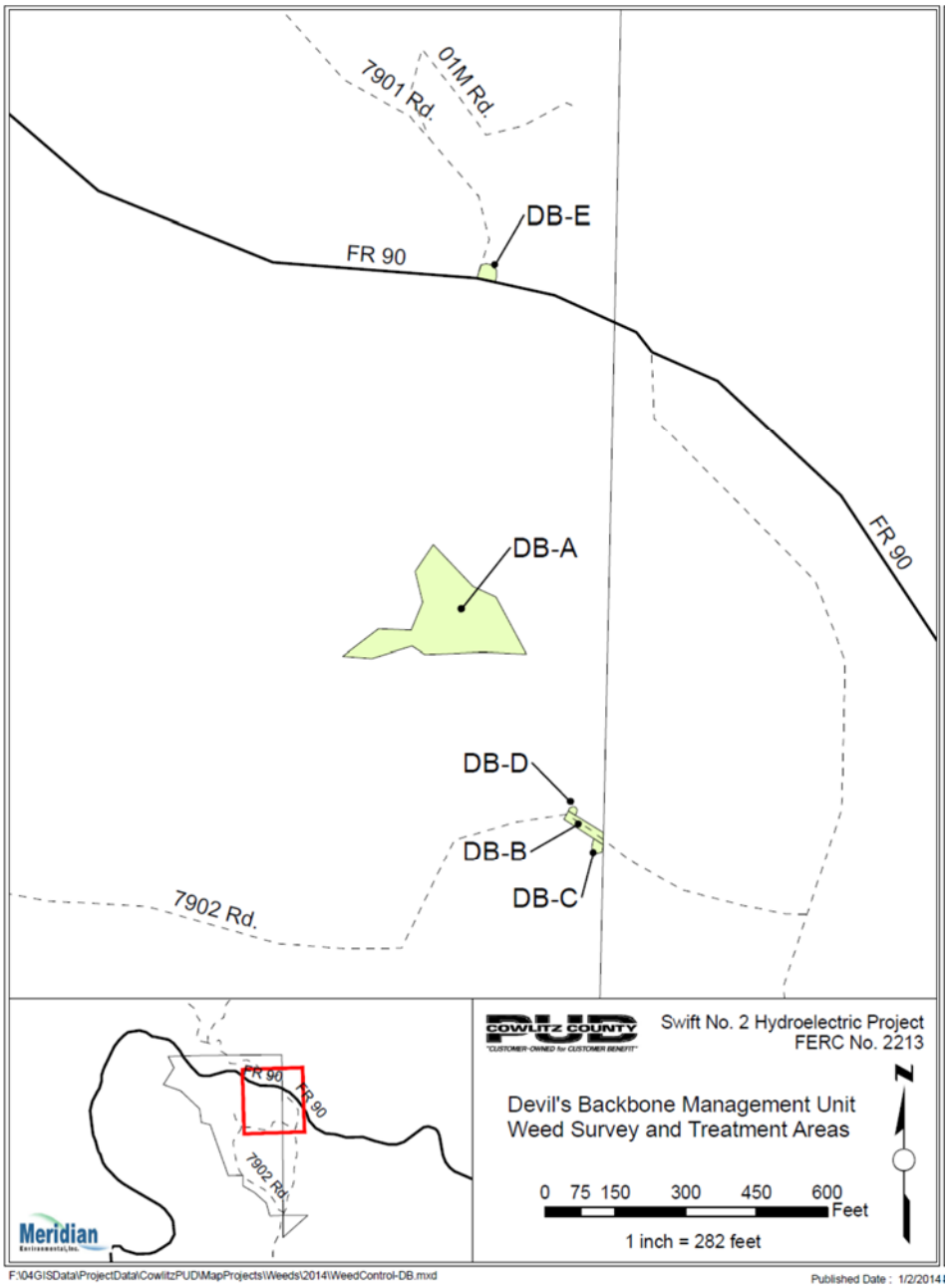


Figure 5. Devil's Backbone Management Unit Weed Survey and Treatment Areas.

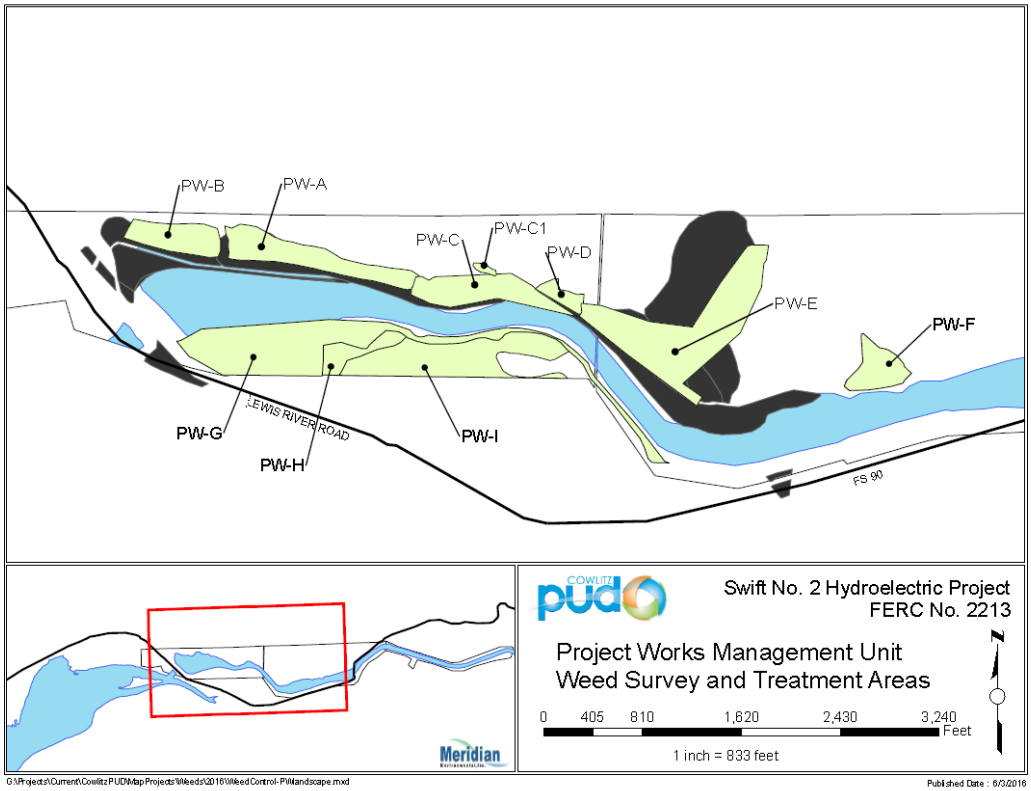


Figure 6. Project Works Management Unit Weed Survey and Treatment Areas.

Updated noxious weed lists are obtained annually from the Cowlitz County and Washington State noxious weed control boards (Skamania County follows the state listings). The current classifications of target weed species observed in the Swift No. 2 Wildlife Management Area (WMA) as of 2016 are shown in **Table 7** below. Weeds shown in bold are species Cowlitz County has selected as high priorities for control.

Table 7. Non-native invasive plants classified as noxious weeds in Cowlitz or Skamania County that have been observed in the Swift No. 2 WMA as of 2016.

Common Name (*Scientific Name*)	Cowlitz County	Skamania County (Washington State)
Bull thistle (*Cirsium vulgare*)	C	C
Canada thistle (*Cirsium arvense*)	**C**	**C**
Common catsear (*Hypochaeris radicata*)	---	C
Common groundsel *(Senecio vulgaris)*	C	C
Common St. Johnswort (*Hypericum perforatum*)	C	C
Evergreen blackberry (*Rubus laciniatus*)	C	C
Himalayan blackberry (*Rubus armeniacus*)	C	C
Oxeye daisy (*Leucanthemum vulgare*)	C	C
Perennial sowthistle (*Sonchus arvensis ssp. arvensis*)	---	C
Robert's geranium (*Geranium robertianum*)	**B**	**B**

Common Name (*Scientific Name*)	Cowlitz County	Skamania County (Washington State)
Scentless mayweed (*Matricaria perforata*)	C	C
Scotch broom (*Cytisus scoparius*)	**B**	**B**
Tansy ragwort (*Senecio jacobaea*)	**B**	**B**

Other non-native invasive species that are not classified in either county as noxious weeds are also recorded when observed. These include foxglove (Digitalis purpurea), self-heal (Prunella vulgaris), brackenfern (Pteridium aquilinum), and common dandelion (Taraxacum officinale).

5.4.4.1.1 Initial Invasive Plant Surveys

Meridian Environmental, Inc. (Meridian) completed initial invasive plant surveys in all high priority areas of the Devil's Backbone MU in 2009. These areas are shown in **Figure 5,** above.

Meridian completed initial invasive plant surveys of high priority areas in the Project Works MU in 2013. These areas are shown in **Figure 6**.

In May 2016, Meridian completed initial invasive plant surveys in the areas mapped PW-G and PW-H, and the northwest corner of PW-I as shown in **Figure 6**. These areas are adjacent to the service road on the south side of the canal and are cover typed as revegetated areas with a grass/forb mix, upland mixed forest, and lodgepole pine forest, respectively. Vectors for weed spread include maintenance activity along the service road and traffic on the Lewis River Road, which borders this area on the south.

PW-H (upland mixed forest) dominant species include red alder (*Alnus rubra)*, Douglas fir (*Pseudotsuga menziesii)*, lodgepole pine (*Pinus contorta*), western hemlock *(Tsuga heterophylla*), and black cottonwood *(Populus trichocarpa)* (**Figure 7**). Red huckleberry (*Vaccinium parvifolium*) and Scotch broom are common in the understory. Based on their density and large stem diameters, Scotch broom likely established at the time canal repairs began in 2002. It has not been treated, and has invaded the upland mixed forest from the adjacent cleared and revegetated area. The District will continue to monitor PW-H to evaluate the risk of spread into the adjacent lodgepole pine stand (identified in the WHMP as a Unique Area), before determining treatment options.

Lodgepole pine is the dominant tree species in PW-I. Understory species include red huckleberry, serviceberry *(Amelanchier alnifolia),* manzanita *(Arctostaphylos columbiana),* salal *(Gaultheria shallon),* kinnikinnick *(Arctostaphylos uva-ursi),* and moss (**Figure 8**). Scotch broom is scattered and patchy in the edge adjacent to PW-H, but the entire stand has not yet been surveyed. The District will complete a weed survey of the entire stand before determining how to treat.

Figure 7. Typical forest setting in PW-H.

Figure 8. Lodgepole pine setting in PW-I.

5.4.4.1.2 Invasive Plant Species Follow-up Surveys

Meridian conducted follow-up surveys May 25, 2016. The purpose of the surveys was to determine the effectiveness of herbicide applications and/or manual removal efforts to date and to identify future treatment needs. **Tables 8 and 9** list the target species observed during the follow-up surveys and summarize their distribution and estimated cover in the Devil's Backbone and Project Works MUs.

Table 8. Survey areas, target species, distribution, and estimated cover in the Devil's Backbone MU (2016).

Survey Area	Survey Acres	Target Species	2016 Distribution	2016 Estimated Cover
DB-A	0.9	Canada thistle	Scattered	0-5%
		Bracken fern	Scattered	0-5%
		Foxglove	Scattered, patchy	0-5%
		Common cat's-ear	Scattered	0-5%
		Birdsfoot trefoil	Scattered, patchy	0-5%
		Tansy ragwort	Scattered	0-5%
DB-B, C, D	0.06	Common cat's-ear	Scattered	5-25%
7902 Road		Common cat's-ear	Scattered	0-5%
7901 Road		No invasive species. Dominant species mixed grass, moss and bare ground.		

Table 9. Survey areas, target species, distribution, and estimated cover in the Project Works MU (2016).

Survey Area	Survey Acres	Target Species	2015 Distribution	2015 Estimated Cover
PW-A	6.5	Himalayan blackberry	Scattered	0-5%
		Common cat's-ear	Scattered	5-25%
		Canada thistle	Scattered	0-5%
		Evergreen blackberry	Scattered	0-5%
		Scentless mayweed	Scattered	25-50%
		Birdsfoot trefoil	Scattered	5-25%
		Scotch broom	Scattered	0-5%
PW-B	3.8	Himalayan blackberry	Scattered/patchy	0-5%
		Scotch broom	Scattered/patchy	0-5%
		Common cat's-ear	Scattered/even	5-25%
		Oxeye daisy	Scattered/even	0-5%
		Scentless mayweed	Scattered	5-25%
		Tansy ragwort	Scattered	0-5%
PW-C	5.5	Himalayan blackberry	Scattered/patchy	0-5%
		Robert's geranium	Even	5-25%
PW-D	1.1	Scotch broom	Scattered	5-25%
		Common cat's-ear	Scattered	25-50%
		Tansy ragwort	Scattered	0-5%
		Oxeye daisy	Scattered	0-5%
PW-G	14.96	Common cat's-ear	Scattered/even	0-5%
PW-H	2.1	Scotch broom	Scattered/patchy	5-25%
PW-I	9.8	Scotch broom	Scattered/patchy	0-5%

Devil's Backbone MU

During the 2016 follow-up survey in DB-A the overall cover of Canada thistle is under good control with treatment in 2015. Grass and forb cover is dense and healthy. Foxglove (which does not provide forage for elk) and birdsfoot trefoil (which provides excellent forage) are both increasing. Other invasive non-native species observed in DB-A include bracken fern and common cats'-ear. During the follow-up survey in DB-B, C, D there was no Scotch broom observed inside the WMA boundary. No invasive plant species were observed along the 7901 Road. Slope failure was observed just south of the road barrier, leaving exposed soil (**Figure 10**).

Figure 9. Foxglove in DB-A.

Figure 10. Slope failure along 7901 Rd.

Project Works MU

The May 2016 follow-up surveys indicated good control of Scotch broom in PW-A and B. In PW-A , only three live plants were observed within the red alder (*Alnus rubra*) stand north of the pond. Birdsfoot trefoil is increasing, providing additional forage opportunities for elk in this area. In PW-B, there are some partially treated Scotch broom plants and new seedlings. The 2015 treatment of Himalayan blackberry in PW-C may have contributed to the spread of herb-Robert due to the increased area of bare ground. In PW-D, there were more Scotch broom skeletons observed, but as in previous years, live plants were found to be growing within other shrub species or on top of or under blow-down material.

5.4.4.2 Invasive Plant Species Control

In May 2013, Cowlitz PUD signed a 1-year interlocal agreement (with an option for 2 additional years) with Skamania County to perform weed control in the WMA. The interlocal agreement was extended to 2014 and 2015.

In August 2015, the Skamania County weed control crew applied Transline® in DB-A, B, C, and D to control Canada thistle and tansy ragwort. During the same week, the crew applied Element® 3A in PW–A, B, C, C-1, D, E, and F to control invasive species including Scotch broom, blackberry, and Robert's geranium. The crew returned to PW-C-1 in September 2015 to apply Element® 3A to control Himalayan blackberry and Robert's geranium.

5.4.4.3 PWMU-PUB Wetland Restoration

During a heavy rain event in January 2009, a landslide buried the PWMU-PUB wetland in mud and large woody debris. The following summer, Cowlitz PUD re-contoured the wetland, reseeded the area, and planted willow (*Salix spp.*) stakes. Crews planted additional willow and red osier dogwood (*Cornus sericia*) stakes and rooted stock of several species in 2010 to further increase the species and structural diversity of wildlife habitat around the wetland (**Figure 11**). The 2016 survey indicates that the pioneering native species, such as red alder, hardstem bulrush (*Scirpus acuminatus*), soft rush (*Juncus effusus*) and numerous other sedges, rushes, and hydrophytic forbs and grasses are colonizing the site. Three amphibian species have been observed to date, including red-legged frogs (*Rana aurora*), Pacific chorus frogs (*Pseudacris regilla*), and rough-skinned newts (*Taricha granulosa*). Several stink bugs *(Largus californicus)* were observed mating on a large log south of the pond, and a marsh wren

(Cistothorus palustris) was also observed in the cattails. The area of open water continues to decrease as soft rush increases. Duckweed *(Lemna minor.)* is abundant.

Figure 11. Open water continues to decrease at PW-PUB wetland.

Figure 12. Stink bugs observed mating.

5.4.4.4 Devil's Backbone Forest Management

In 2016, the TCC set aside a total of $6,375 for the 2016 Timber Management Fund. This amount plus $7,441 from the 2015 Timber Management Fund totals $13,816. These funds were not expended in 2016 and will be carried forward, with interest, to the Year 9 2017 budget. It is expected that the Timber Management Fund will continue to accrue for a number of years.

5.4.4.5 Public Access Monitoring

Public access surveys were conducted concurrently with invasive plant species surveys May 25, 2016. The purpose of the surveys is to document the condition of roads, gates, and signs; evidence of authorized (i.e., non-motorized) or unauthorized (i.e., motorized) public access; and screening between the roads and adjacent habitat. The surveys included roads that lead into the Devil's Backbone MU and the Project Works MU maintenance road, shown in **Figures 5 and 6**, respectively.

Devil's Backbone MU

The 7901/01M Road leads north into the Devil's Backbone MU from Forest Road 90 (FR 90). It traverses DBMU sites 7, 8, 9, 10 and 12, passing through riparian deciduous and mid-successional conifer stands with a sparse shrub layer. But because there is no traffic, visual screening is a low concern. The road condition remains fair except at the site of a shallow slope failure that occurred just south of the road barrier. The slope failure led to several trees falling across the road. The barrier constructed in July 2012 to block the 7901 Road to motorized traffic is in good repair. There was no evidence of attempts to drive around or over it. Four of the six "Road Closed" signs are still in place and in good shape. The remaining two are missing. There were animal trails at both ends of the barrier.

Figures 13 & 14. Slope failure along 7901 Rd.

The 01M Road is passable only to ATVs or motorcycles. Alders and bigleaf maple (*Acer macrophyllum*) are encroaching into the roadbed along its entire length. This road was not surveyed in 2016.

The 7902 Road leads south from FR 90, crossing adjacent property before turning west and entering the Devil's Backbone MU, where it passes through DBMU sites 2, 3, and 4. The adjacent property owner maintains a steel swing gate near the intersection with FR 90 and attempts to keep the gate locked, but reports that the locks are often removed in an unauthorized manner. At the time of the May 2016 survey, the gate was closed and there was no lock or chain. The segment of the road just south of the gate is rough. There was no evidence of unauthorized motorized access or non-motorized access. No gates or signs have been installed on the 7902 Road at either the east or south entrances to the Devil's Backbone MU. Dense conifers crowd the east entrance to the property. The northern part of the road is in good condition, with no erosion or drainage concerns and only minor amounts of blowdown. At the southern end, trees continue to encroach on the road and there was a significant amount of blowdown (**Figure 15**). Mid-successional conifer stands and a sparse shrub layer provide little vegetative screening between the roadway and adjacent habitat. However, the risk of wildlife disturbance is low, due to the presence of the gate near the intersection of FR 90 and the steep, rocky segment of the road just south of the gate.

On December 1, 2015, the Bureau of Land Management (BLM) removed the squatter's cabin from their land at the southern end of the Devil's Backbone. Cowlitz PUD very much appreciates the Cowlitz Tribe and BLM's efforts in this matter.

Figure 15. Blow down over roadway at the south end of the 7902 Road.

Project Works MU

The Project Works MU maintenance road was inspected May 25, 2016. This road is closed to public access, with locked gates at both the east and west ends. Both gates (chain link at the east end; steel swing gate at the west end) have padlocks which are in good condition. "No Trespassing" signs installed on the gates are also in good condition. No evidence of unauthorized entry or use of Project Works MU lands was observed during the public access surveys.

5.4.4.6 Fisher Candidate Conservation Agreement with Assurances

On May 6, 2016 Cowlitz PUD received confirmation from the Washington Department of Fish and Wildlife of enrollment of the Devil's Backbone and Project Works MU lands in the Candidate Conservation Agreement with Assurances (CCAA) for the Fisher in the state of Washington. This agreement is designed to promote fisher conservation while also addressing concerns about future regulatory restrictions if fishers were to ever become a listed species under the federal Endangered Species Act (ESA). As an enrolled landowner, Cowlitz PUD is entitled to regulatory assurances against future land-use restrictions on its enrolled lands.

5.4.5 SA Section 10.8.4 Habitat Evaluation Procedures

Implementation scheduled for 2025 (Year 17) of the Swift No. 2 License.

5.4.6 SA Section 10.8.4.2 Review of Effectiveness of WHMP

Implementation scheduled for 2025 (Year 17) of the Swift No. 2 License.

5.4.7 SA Section 10.8.3 Cowlitz PUD 2017 Annual Plan

Cowlitz PUD will begin preparation of the 2017 WHMP Annual Plan in January 2017.

5.5 Cowlitz PUD Terrestrial 2017 Annual Plan

5.5.1 SA Section 10.6 Cowlitz PUD Completed Implementation: Advance Purchases [Devil's Backbone Conservation Covenant]

These lands will be managed under the WHMP.

5.5.2 SA Section 10.8.1 Cowlitz PUD Development of the Wildlife Habitat Management Plan (WHMP)

The WHMP will be implemented via the 2017 Annual Plan upon the FERC approval.

5.5.3 SA Section 10.8.2 Cowlitz PUD WHMP Fund

The Timber Management Fund, carry forward, interest, and the Year 9 2016 annual funding amount will be available in 2017. Cowlitz PUD will make approximately $19,043 available for WHMP activities December 26, 2017.

5.5.4 SA Section 10.8.3 Management of the Plan [Annual Plan]

Following consultation with the TCC, Cowlitz PUD will file the 2017 Annual Plan with the FERC. Upon the FERC approval, Cowlitz PUD will implement the 2017 Annual Plan.

Lewis River – 2015, Photo courtesy of Jessica Kimmick – Sr. Environmental Analyst, PacifiCorp

6.0 Law Enforcement

6.1 SA Section 13.2.1 Law Enforcement

Throughout the year the Lewis River Basin was patrolled by a full time Washington Department of Fish and Wildlife officer, a part time Skamania County Deputy (May through October) and a full time Cowlitz County Deputy. During some periods, additional patrols were provided by other officers. For these officers the focus is protection of fish and wildlife, cultural resources, public safety and security.

The following table presents the WDFW Fish and Wildlife Police charges/citations during January through December 2016 toward fish and wildlife law enforcement requirements in the Lewis River Settlement Agreement:

Table 10. WDFW Actions taken 2016

Incident Type	Total
ESA - COL. RIVER SALMON/STEELHEAD STAMP	26
ESA/PROTECTED SPECIES VIOLATION	2
FRESHWATER FISH VIOLATION	10
GENERAL AUTHORITY INVESTIGATION	1
BIG GAME VIOLATION	8
BIRDS VIOLATION	4
DANGEROUS WILDLIFE REPORT	8
FRESHWATER FISH VIOLATION	1
INJURED WILDLIFE REPORT	3
OFF ROAD VEHICLE INCIDENT/VIOLATION	2
PROBLEM WILDLIFE REPORT	1
REC. LICENSE FRAUD INVESTIGATION	1
TRAFFIC INCIDENT/VIOLATION	1
Grand Total	**68**

The following table presents the WDFW Fish and Wildlife Police charges/citations during January through December 2016 toward fish and wildlife law enforcement requirements in the Lewis River Settlement Agreement:

Table 11. WDFW Charges/Citations 2016

Count of Charges	
Incident Type	**Total**
BIG GAME VIOLATION	6
BIRDS VIOLATION	1
BOATING SAFETY INSP./VIOLATION	7
DISCOVER PASS/ACCESS PASS VIOLATION	1
ESA - COL. RIVER SALMON/STEELHEAD STAMP	33
ESA/PROTECTED SPECIES VIOLATION	11
FRESHWATER FISH VIOLATION	13
GENERAL AUTHORITY INVESTIGATION	6
LANDS INCIDENT/VIOLATION	2
OFF ROAD VEHICLE INCIDENT/VIOLATION	7
REC. LICENSE FRAUD INVESTIGATION	3
SMALL GAME VIOLATION	1
TRAFFIC INCIDENT/VIOLATION	22
TRESPASSING	1
Grand Total	**114**

The following table represents WDFW Fish and Wildlife Police arrests/bookings during January through December 2016 toward Fish and Wildlife law enforcement requirements in the Lewis River Settlement Agreement:

Table 12. WDFW Arrests/Bookings 2016

Sum of Charge Count	
Incident Type	**Total**
ESA/PROTECTED SPECIES VIOLATION	2
GENERAL AUTHORITY INVESTIGATION	2
TRAFFIC INCIDENT/VIOLATION	2
Grand Total	**6**

7.0 FUNDING

This section presents an accounting to date of the funding obligations for the Lewis River Settlement Agreement section 7.5.

Lewis River – 2016, Photo courtesy of Kim McCune – Sr. Business Administrator, PacifiCorp

Lewis River License Implementation
Lewis River Aquatics Fund - Resource Projects
Sections 7.5, 7.5.1, 7.5.3, 7.5.3.1 & 7.7

Release Date	Funds Received	Expense	Interest	Balance	Notes
12/31/2015				**$ 1,904,600.13**	
1/22/2016	$ 241.29	$ -	$ -	$ 1,904,841.42	2011 Pine Creek Instr/Floodplain Structures for BT & Steelhead; funds not used - USDA FS
12/31/2016	$ -	$ (40,000.00)	$ 71,953.43	$ 2,094,936.04	2014 HAAPA Enhancement Project - LCFEG
		Total Spent to Date:		**$ (1,783,531.00)**	
		Balance Remaining:		**$ 2,094,936.04**	

Lewis River License Implementation
Lewis River Aquatics Fund - Bull Trout
Sections 7.5, 7.5.1, 7.5.3, 7.5.3.1 & 7.7

Release Date	Funds Received	Expense	Interest	Balance	Notes
12/31/2015				**$ 674,536.81**	
12/31/2016	$ -	$ -	$ 24,146.07	$ 698,924.17	$ -
		Total Spent to Date:		**$ (234,547.92)**	
		Balance Remaining:		**$ 698,924.17**	

Lewis River License Implementation
Lewis River WHMP Fund (Conservation Easement Lands)
Section 10.8.2

Release Date	Funds Received	Funds Expended	Balance	Notes
12/31/2015			**$ -**	
12/31/2016	$ -	$ (273.82)	$ -	Expenditure for 2016
	Total Spent to Date:		**$ (1,848.26)**	
	Balance Remaining:		**$ 278.68**	

Lewis River License Implementation
Lewis River WHMP Fund (Fee Simple Lands)
Section 10.8.2

Release Date	Funds Received	Expense	Interest	Balance	Notes
12/31/2015				**58.25**	
12/31/2016	-	(485,969.52)	-	(28,487.50)	-
		Total Spent to Date:		**$ (3,246,686.94)**	
		Balance Remaining:		**$ 449,018.26**	

Lewis River License Implementation
Lewis River LWD Fund - Haul
Section 7.1.1

Release Date	Funds Received	Funds Dispersed	Balance	Notes
4/1/2015			**$ 3,000.00**	
4/1/2016	$ 2,000.00	$ -	$ 3,000.00	7.1.1 Large Woody Debris Program, ILR-LWD
4/20/2016	$ -	$ (3,986.58)	$ 1,013.42	
		Total Spent to Date:	**$ (16,986.58)**	
		Balance Remaining:	**$ 1,013.42**	

Lewis River License Implementation
Lewis River LWD Fund - Resource
Section 7.1.1

Release Date	Funds Received	Funds Dispersed	Balance	Notes
12/26/2015			**$ 61,500.00**	
		Total Spent to Date:	**$ (18,500.00)**	
		Balance Remaining:	**$ 71,500.00**	

Lewis River License Implementation
Swift No. 1 & Swift No. 2 Land and Habitat Protection Fund
Section 10.2, 10.2.1

Release Date	Funds Received	Expense	Interest	Balance	Notes
12/26/2015				$ 2,637,008.30	
			Total Spent to Date:	$ (5,696,433.89)	
			Balance Remaining:	$ 3,354,777.55	

Lewis River License Implementation
Lewis River Land Acquisition and Habitat Fund[5]
Section 10.3, 10.3.1, 10.3.3

Release Date	Funds Received	Expense	Interest	Balance	Notes
12/26/2015				$ 1,092,883.67	
			Total Spent to Date:	$ (1,645,398.12)	
			Balance Remaining:	$ 1,129,386.89	

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Attachment A
ACC / TCC Comments

Responses to Comments Received on Draft Lewis River 2016 Annual Summary of License Implementation and Compliance - Aquatic and Terrestrial Resources

	Commenter	Comment Number	Location	Comment	Response
1	Peggy Miller, WDFW	1	3.2 Aquatic Measures Implemented as of the End of 2016	This section contains 2016 actions as well as actions completed in past years. In many of the subsections past actions are presented in the present tense, implying the actions are not complete. Making changes to past tense is not critical, but correction would prevent this from perpetuating in future reports.	Noted - we will likely change how we report on previously completed actions in the next Annual Report
2	Peggy Miller, WDFW	2	3.2.4 SA Section 4.4 Downstream Transport at Swift No. 1 Dam Modular Surface Collector (SA 4.4.1)	Two sentences provide different numbers for the total salmonids captured in 2016. It is fairly easy to determine the correct number by reading further but deletion of the incorrect sentence would increase clarity.	Sentence with conflicting data removed
3	Peggy Miller, WDFW	3	3.2.35 SA Section 8.8 Juvenile Acclimation Sites	During the December 2015 high flow event the ground at the proposed site for the Crab Creek above ground acclimation pond was eroded but the infrastructure is intact. Please clarify that the Crab Creek acclimation pond infrastructure was not completely destroyed. In addition the investigation by USFS on the availability of fall instream flow for the acclimation pond and the potential for another NEPA should also be discussed in the paragraph.	Revised the reference to complete destruction of the Crab Creek site. Added language about the USFS review of the NEPA language as it relates to fall outplanting
4	Peggy Miller, WDFW	4	3.3.14 SA Section 7.5 Aquatics Fund	This section provides past actions rather than planned 2017 actions. Please provide planned actions such as selecting final proposals to fund, revising the Aquatic Fund criteria selection and soliciting for the next grant round.	Revised language to cover plans in 2017
5	Peggy Miller, WDFW	5	3.3.19 SA Section 8.7 Hatchery and Supplementation Facilities, Upgrades, and Maintenance	Hatchery upgrades are complete but maintenance is ongoing and will be addressed in 2017 as needed. Please identify that potential maintenance activities will be addressed as needed in the 2017 plan.	It is not necessary to address potential maintenance since that is not a specific task called out for in the SA. Potential maintenance is addressed with hatchery staff every year during the Lewis River annual budget discussions.
6	Peggy Miller, WDFW	6	3.3.20 SA Section 8.8 Juvenile Acclimation Sites	It is WDFWs' understanding that the Crab Creek facility (infrastructure) was not destroyed by the December 2015 instream flows. In addition a decision on Crab Creek and Clear Creek has not been made by the ACC so identifying work to permit deconstruction of those two sites may be premature.	Language revised to reflect WDFW's comments
7	Peggy Miller, WDFW	7	3.3.22 Monitoring and Evaluation Post-Season Incidental Take	This section provides past actions rather than planned 2017 actions. Please provide planned actions and move this information to section 3.2 Aquatic Measures Implemented as of the End of 2016. Planned actions would be to continue to monitor and report incidental take	Moved this information to 3.2.37 because it is a report on 2016 take not a plan for future action.
8	Peggy Miller, WDFW	8	6.2 SA Section 13.2.1 Law Enforcement	The paragraphs preceding Table 10 and Table 11 are the same. Please clarify the difference between the two tables.	Table 11 reports WDFW 2016 Charges/Citations while Table 12 reports WDFW 2016 Arrests/Bookings.

Attachment B
Section 14 of the Lewis River Settlement Agreement

SECTION 14: COORDINATION AND DECISION MAKING

14.1 Coordination and Decision Making. The provisions of this Section 14 describe the processes for coordination and decision making among the Parties for the implementation of the terrestrial and aquatic PM&E Measures provided for in this Agreement. As provided for in Section 14.2 below, the Licensees shall convene a Terrestrial Coordination Committee ("TCC") to coordinate implementation of the terrestrial PM&E Measures described in Section 10 (including any exhibits, schedules, and appendices related to Section 10), and shall accomplish the purposes set forth in Section 14.1.1 below. The Licensees shall convene an Aquatics Coordination Committee ("ACC") to coordinate implementation of the aquatics PM&E Measures described in Sections 3 through 9 (including any exhibits, schedules, and appendices related to those Sections), referred to below as terrestrial and aquatic PM&E Measures.

14.1.1 Purposes of the TCC. The TCC is intended to accomplish the purposes set forth below:

a. Provide a forum for coordination between the Licensees and the other Parties on terrestrial resources PM&E Measure implementation.

b. Oversee the development by the Licensees of an objective-oriented WHMP prior to the Issuance of the New Licenses.

c. Monitor implementation of that WHMP.

d. Oversee the HEP study in the 17th year after Issuance of the New Licenses, and modify the WHMP if necessary based on the HEP's results.

e. Oversee and make decisions regarding the: (1) Yale Fund; (2) the Swift Fund; and (3) the Lewis River Fund.

f. Oversee the annual budget for the WHMP.

14.2 Coordination Committees. Within 60 days after the Effective Date, PacifiCorp and Cowlitz PUD shall convene the TCC and the ACC.

14.2.1 Committee Coordinators. Within 30 days after the Effective Date, PacifiCorp Energy and Cowlitz PUD each shall designate one Committee Coordinator for the TCC and one Committee Coordinator for the ACC. PacifiCorp Energy and Cowlitz PUD shall make their designations by notice to the Parties in accordance with the notice provisions in Section 16.6. The PacifiCorp Energy Committee Coordinator(s) shall be employed or retained by PacifiCorp Energy and may represent PacifiCorp Energy on the TCC and the ACC. The Cowlitz Committee Coordinator(s) shall be employed or retained by Cowlitz PUD and may represent Cowlitz PUD on the TCC and the ACC. The PacifiCorp Energy Committee Coordinator(s) shall, as their primary responsibilities, oversee the coordination and implementation of the terrestrial and aquatics PM&E Measures that are the responsibility of PacifiCorp

Energy as provided in this Agreement. The Cowlitz PUD Committee Coordinator(s) shall oversee the coordination and implementation of the terrestrial and aquatics PM&E Measures that are the responsibility of Cowlitz PUD as provided in this Agreement. PacifiCorp Energy and Cowlitz PUD Committee Coordinators together shall oversee the coordination and implementation of terrestrial and aquatics PM&E Measures for which PacifiCorp Energy and Cowlitz PUD have joint responsibility as provided in this Agreement.

14.2.2 TCC and ACC Membership. Within 30 days after the Effective Date, or at any time thereafter with 30 days' notice to the Licensees, each Party, at its own discretion and cost, may designate one representative for membership on the TCC and may designate one representative for membership on the ACC and may designate one or more alternates. The Party shall make its designation(s) by notice to the Parties in accordance with Section 16.6. A Party not participating on the TCC, the ACC, or both may request, by notice to the Parties in accordance with Section 16.6, to be placed on a contact list to receive notices of committee meetings and releases of information, including annual reports and other interim reports that the TCC or the ACC may issue.

14.2.3 TCC and ACC Functions. The TCC and the ACC will:

a. Coordinate and Consult on development of plans by the Licensees as provided in this Agreement;

b. Review information and oversee, guide, and make comments and recommendations on implementation and monitoring of the terrestrial and aquatic PM&E Measures, including plans;

c. Consult with the Licensees on their respective reports prepared under this Agreement regarding implementation of the terrestrial and aquatic PM&E Measures as referred to in Section 14.2.6 below;

d. Make decisions, grant approvals, and undertake any additional duties and responsibilities expressly given to the TCC or the ACC with respect to the terrestrial and aquatic PM&E Measures;

e. Establish, among other things, (i) procedures and protocols for conducting committee meetings and deliberations to ensure efficient participation and decision making; (ii) rules for quorum and decision making in the absence of any member; (iii) alternative meeting formats as desired, including phone or teleconference; and (iv) the methods and procedures for updating committee members on interim progress of development and implementation of the terrestrial and aquatic PM&E Measures;

f. As deemed necessary and appropriate by the TCC or the ACC, establish subcommittees to carry out specified committee functions and responsibilities described in this Section 14.2.3, and establish the size of,

membership of, and procedures for any such subcommittees; and

g. Discuss the protocols and the content of public information releases; provided that each Party retains the right to release information to the public at any time without such discussion.

14.2.4 TCC and ACC Decision-Making Process and Limitations. The TCC and the ACC shall make comments, recommendations, and decisions in a timely manner as provided below:

a. Each Party represented on the TCC and the ACC will have the authority to participate in all committee discussions relating to, and to provide input and advice on, decisions regarding implementation of the terrestrial or aquatics PM&E Measures;

b. The TCC and the ACC shall strive to operate by Consensus. Whether or not the TCC or the ACC has final authority over decisions on terrestrial and aquatic PM&E Measures, the Licensees and other Parties may proceed with actions necessary to implement the New Licenses or this Agreement, even though Consensus is not achieved; provided that in such cases the responsible Licensee or Licensees shall notify the Commission of the comments of the ACC or TCC members and the areas of disagreement. If the TCC or ACC does not reach Consensus, then any member of the TCC or ACC, respectively, may initiate the ADR Procedures as provided in Section 15 below.

c. Where one or more Parties have approval authority under this Agreement, Licensees shall notify the Commission of any approvals that were not obtained, include the relevant comments of the Parties with approval authority, describe the impact of the lack of approval on the schedule for implementation of PM&E Measures, and describe proposed steps to be taken to gain the approval, including dispute resolution.

d. In no event shall the TCC or the ACC increase or decrease the monetary, resource, or other commitments made by PacifiCorp Energy and Cowlitz PUD in this Agreement; override any other limitations set forth in this Agreement; or otherwise require PacifiCorp Energy to modify its three Projects' facilities without PacifiCorp Energy's prior written consent or require Cowlitz PUD to modify its Project's facilities without Cowlitz PUD's prior written consent, which consent may be withheld in the applicable Licensee's discretion.

e. At any juncture where discussion or other contact with the ACC or TCC is required by this Agreement, when requested by the Services or as required by the Agreement, the ACC or TCC Committee Coordinator, respectively, shall schedule an opportunity to discuss the relevant issue with the ACC or TCC. This event shall consist of a conference call, in-person meeting, or other appropriate forum to enable full consideration of the issue.

14.2.5 TCC and ACC Meetings. Commencing in the first year after the Effective Date and each year thereafter for the terms of the New Licenses, the TCC and ACC Committee Coordinators shall arrange and provide an agenda for an annual meeting of their respective committees. The TCC and ACC Committee Coordinators also shall arrange and provide an agenda for any additional meetings deemed necessary by either coordinator for a committee or at the request of any two Parties on that committee, which request shall be sent simultaneously to all members of that committee. Members of the TCC and the ACC shall be given a minimum of 30 days' notice prior to any meeting, unless otherwise agreed to by the members of the applicable committee.

14.2.6 TCC and ACC Reports

The Committee Coordinators for the TCC and the Committee Coordinators for the ACC shall prepare and file with the Commission detailed annual reports on the TCC and ACC activities, monitoring and evaluations under the M&E Plan, and implementation of the terrestrial and aquatics PM&E Measures occurring during the prior year, as well as plans for the coming year as required in this Agreement. The annual reports may also include plans and reports required pursuant to Sections 4.9.1, 7.7.1, 8.2.3, 8.2.4, 10.5, and 10.8.3. Copies of such reports will be made available to each Party. The annual reports shall be prepared in Consultation with the TCC and ACC committee members and shall be submitted to the committees for review each year, commencing after the Effective Date. Committee members shall have a minimum of 30 days to review and provide comment on a draft report before a final report is prepared and filed with the Commission. The Licensees shall submit the final report to the Commission not later than 30 days after the close of the ACC and TCC comment periods. To the extent that comments are not incorporated into the final report, an explanation will be provided in writing, and such explanation shall be included in the report.

Attachment C is saved as a separate file.

Attachment C
Lewis River Bull Trout
2016 Annual Operations Report

Attachment D is saved as a separate file.

Attachment D
Lewis River Bull Trout
2017 Annual Operations Plan

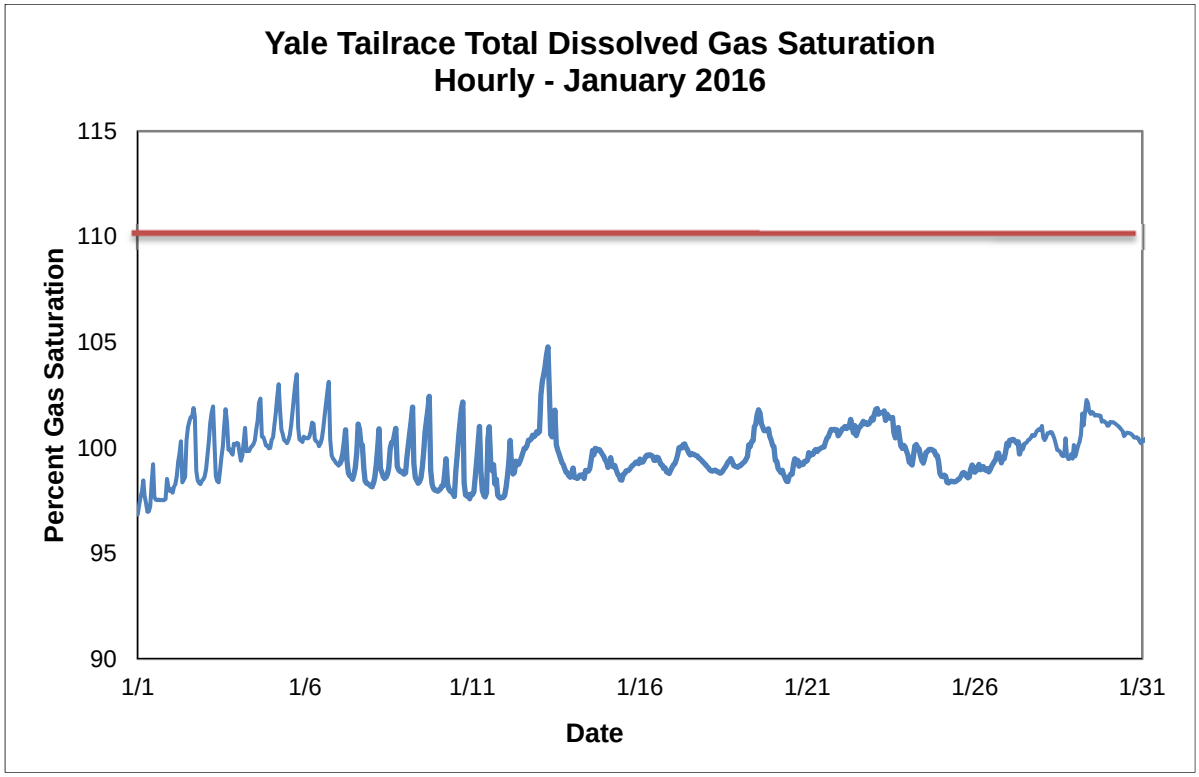
Attachment E is saved as a separate file.

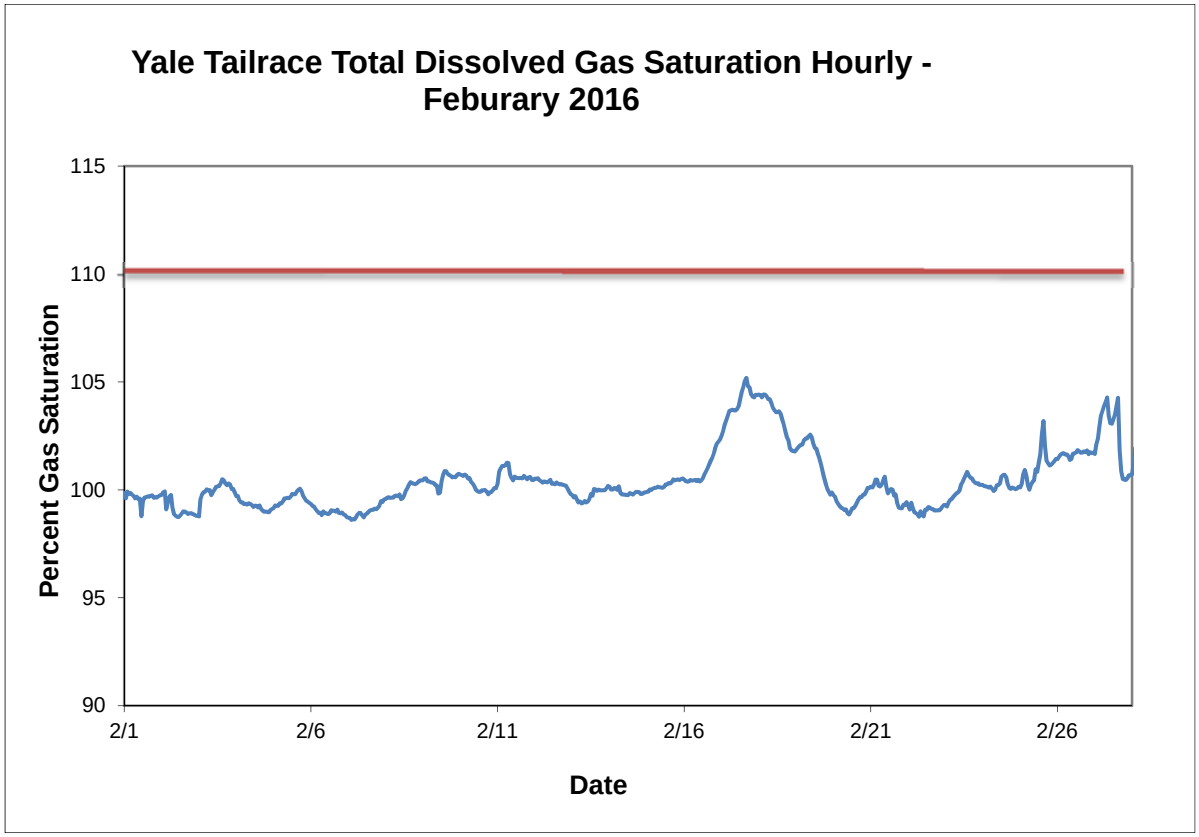
Attachment E
Hatchery and Supplementation Plan 2016 Annual Operations Report

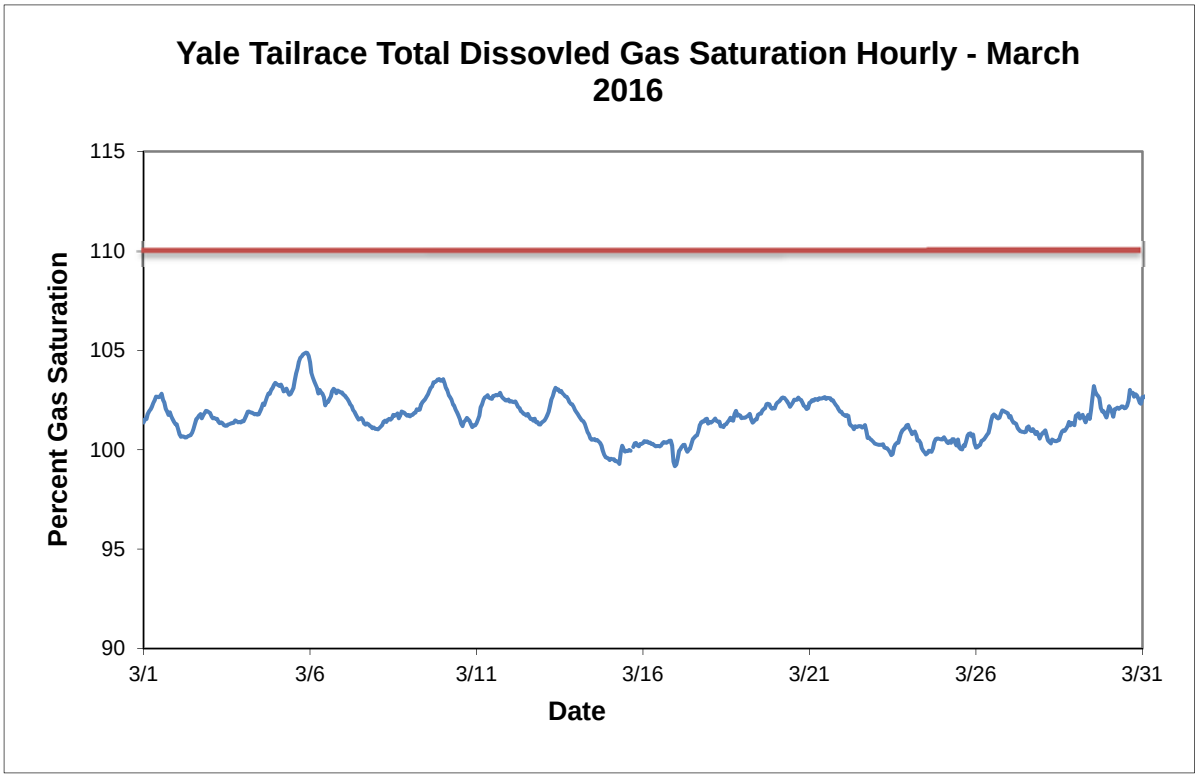
Attachment F is saved as a separate file.

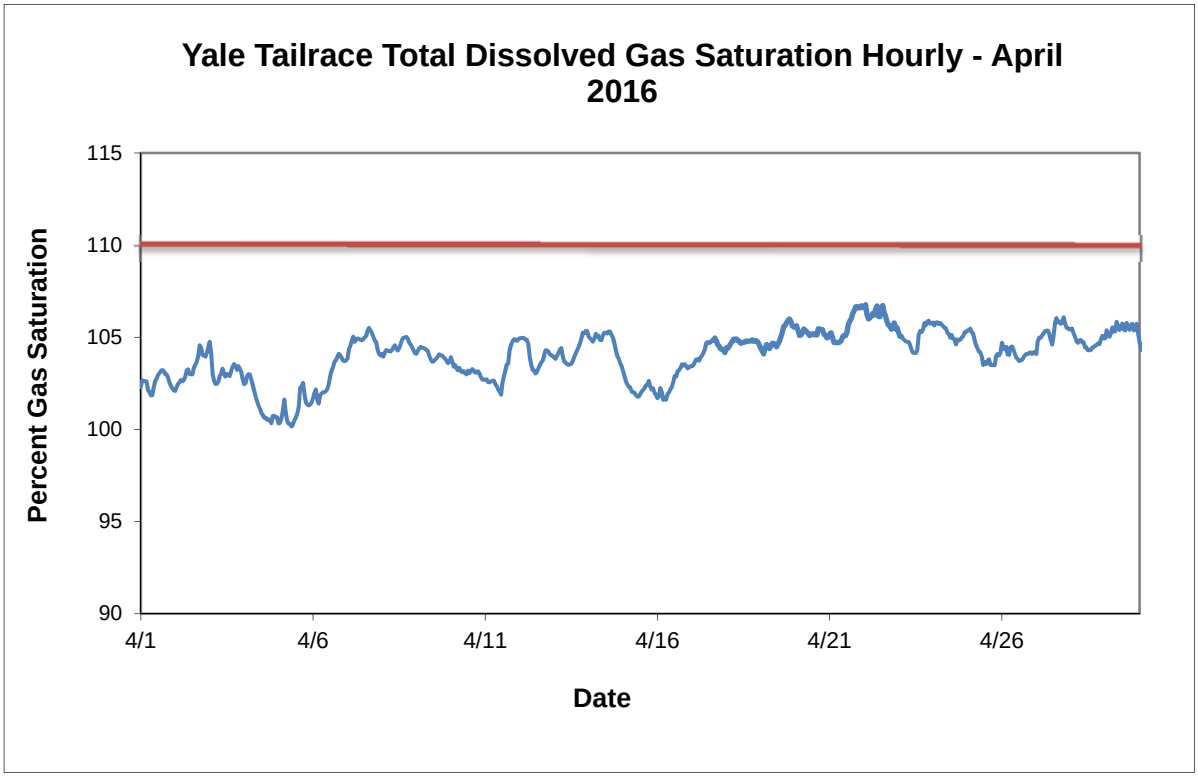
Attachment F
2016 Lewis River Fish Passage Program Annual Report

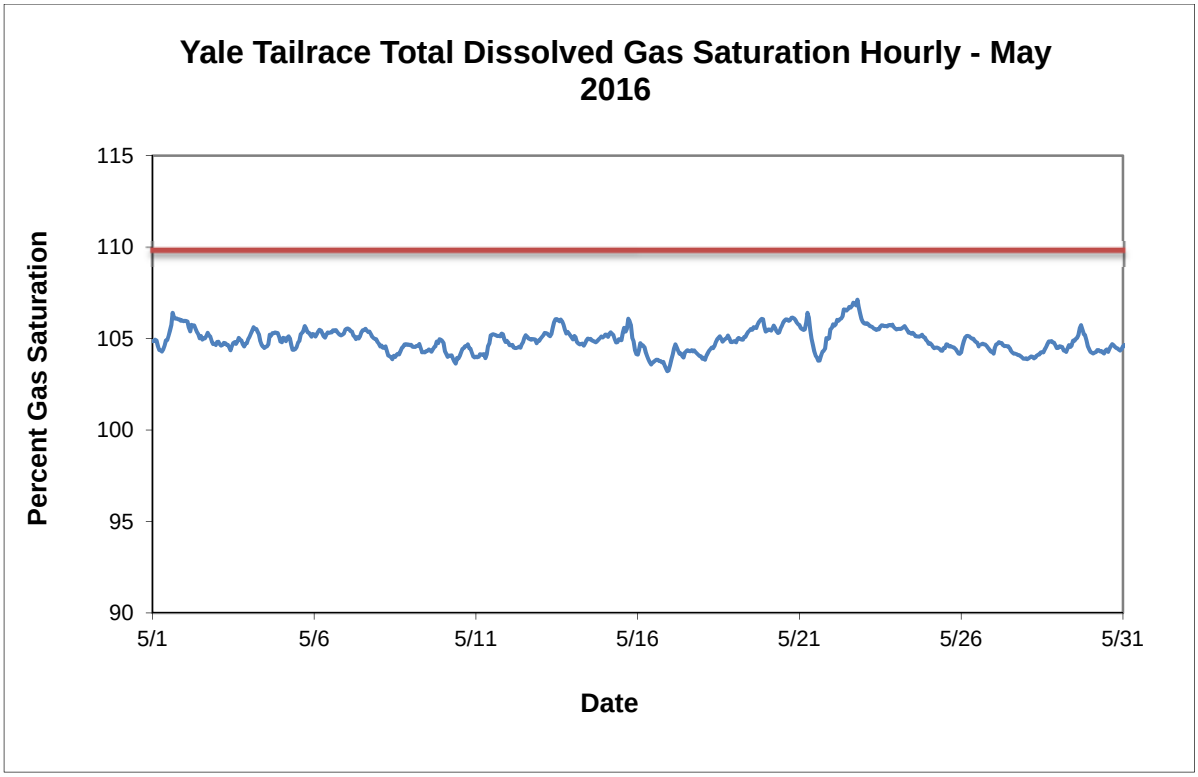
Attachment G
Yale Water Quality Graphs

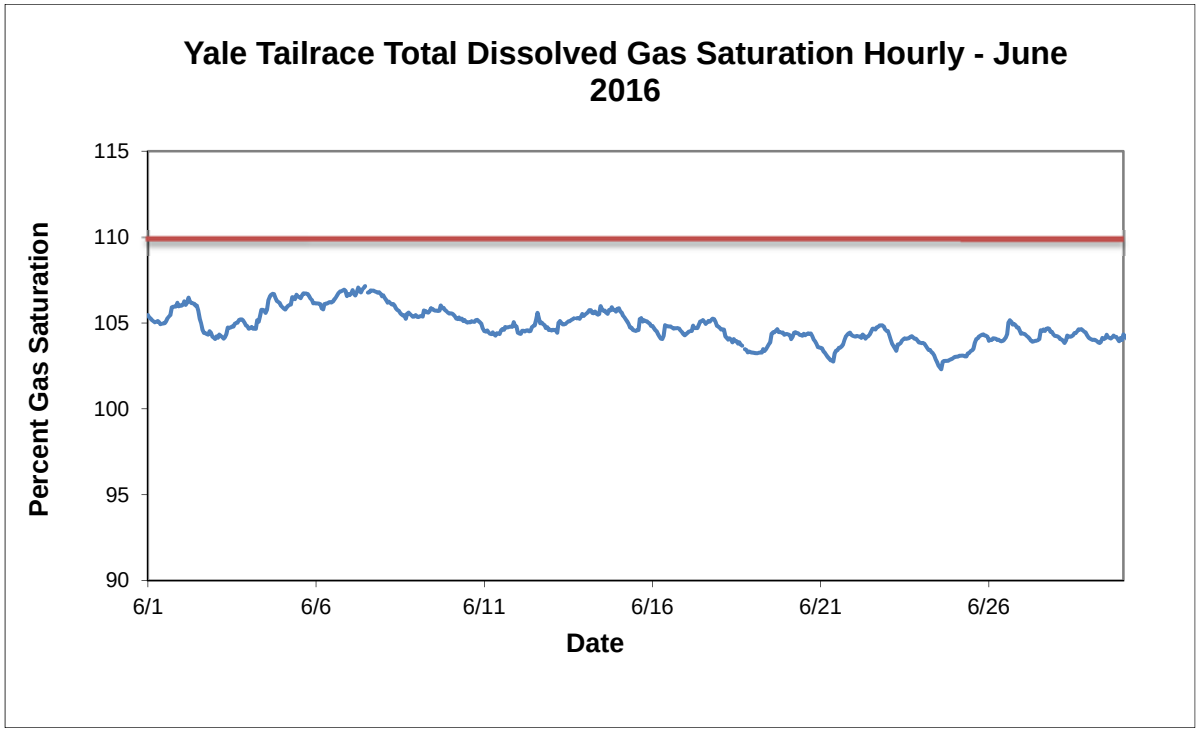

Yale Tailrace Total Dissolved Gas Saturation
Hourly - January 2016
Percent Gas Saturation
115
110
105
100
95
90
1/1
1/6
1/11
1/16
1/21
1/26
1/31
Date

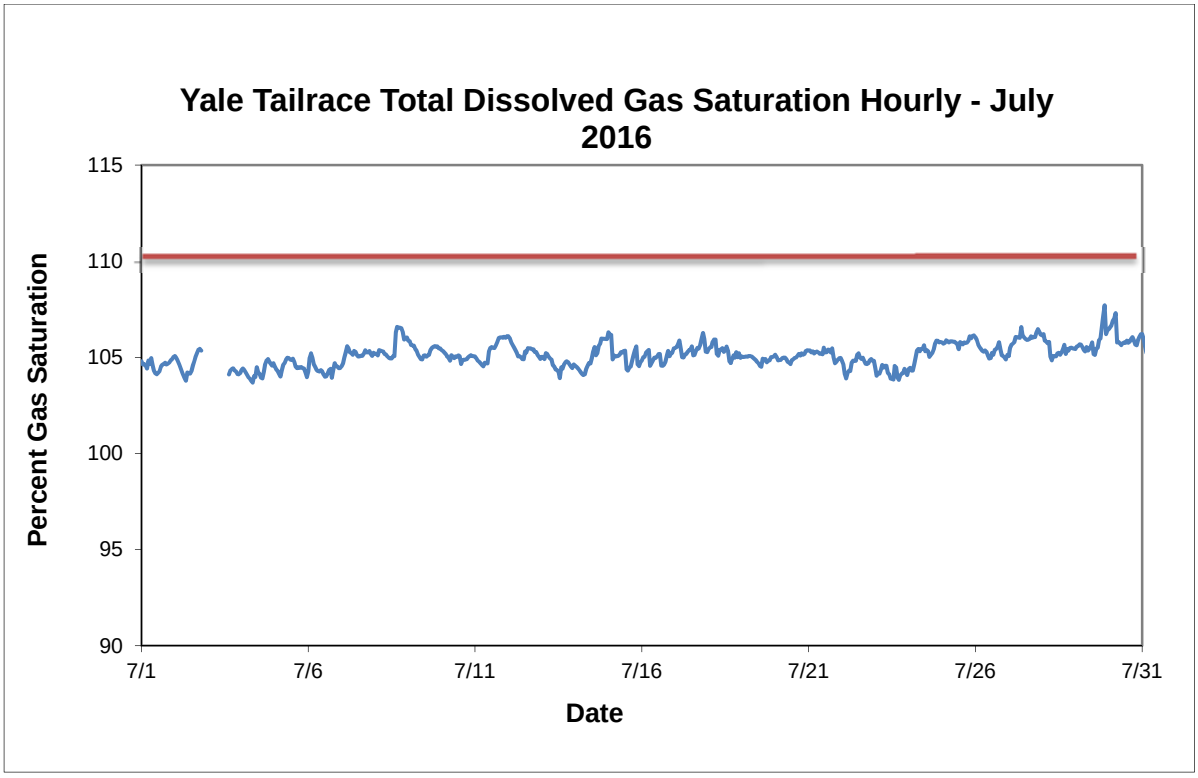

Yale Tailrace Total Dissolved Gas Saturation Hourly - Feburary 2016
Percent Gas Saturation
115
110
105
100
95
90
2/1
2/6
2/11
2/16
2/21
2/26
Date

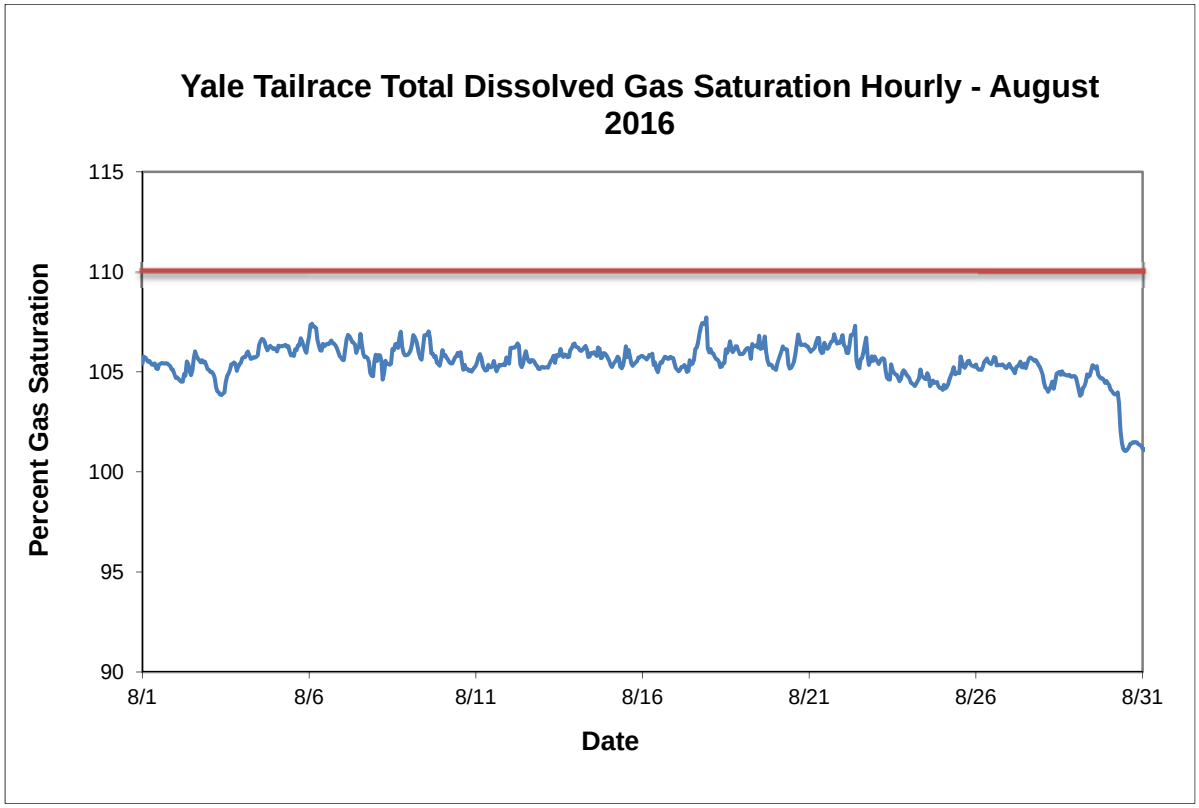

Yale Tailrace Total Dissovled Gas Saturation Hourly - March 2016
Percent Gas Saturation
115
110
105
100
95
90
3/1
3/6
3/11
3/16
3/21
3/26
3/31
Date

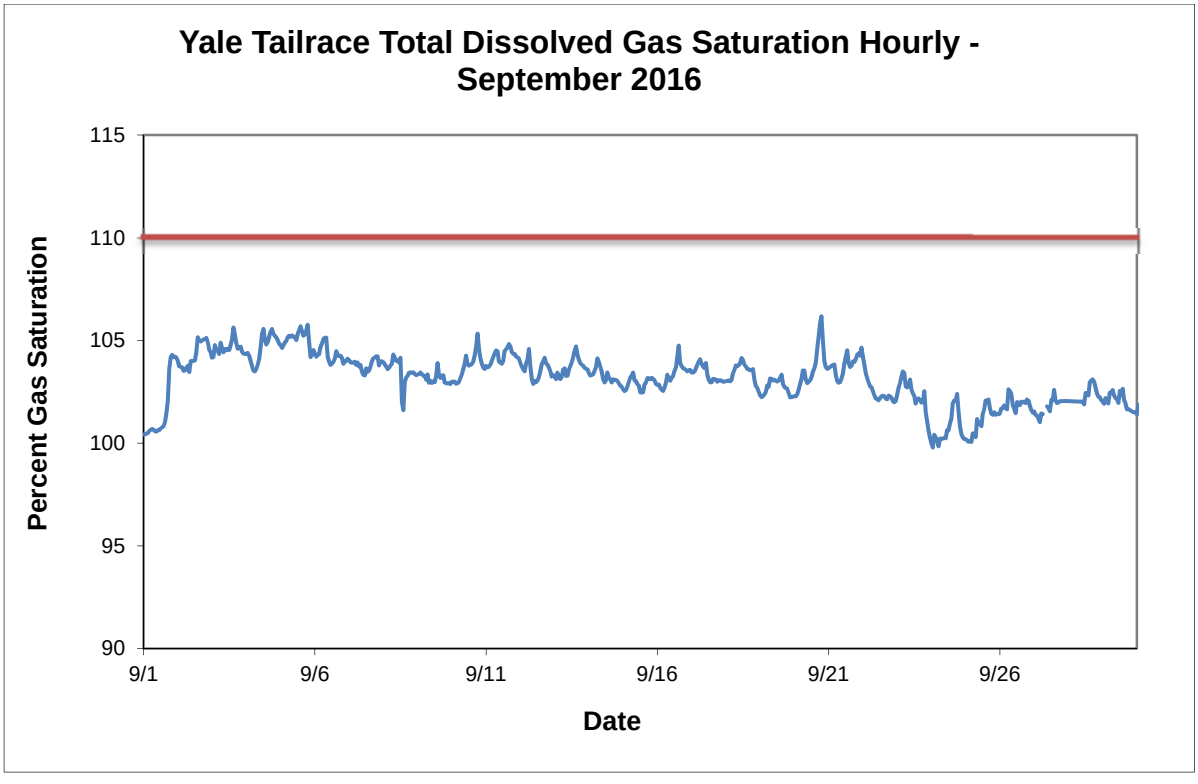

Yale Tailrace Total Dissolved Gas Saturation Hourly - April 2016
Percent Gas Saturation
115
110
105
100
95
90
4/1
4/6
4/11
4/16
4/21
4/26
Date

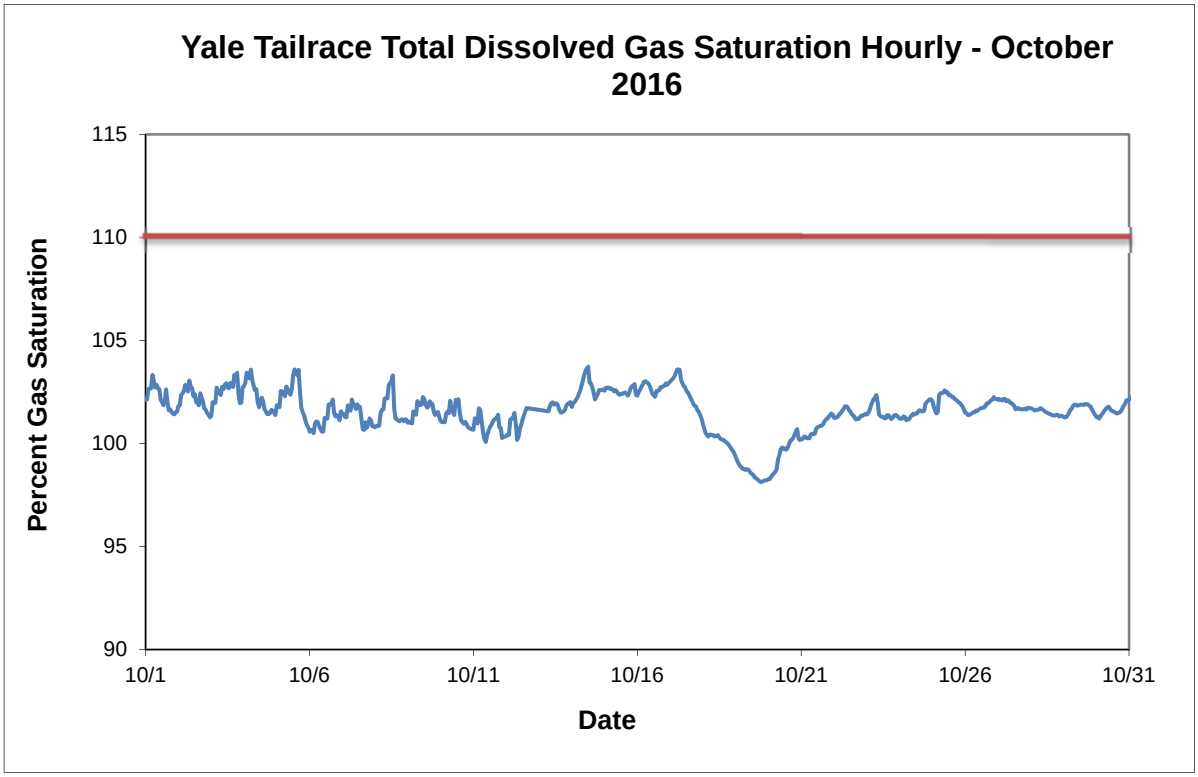

Yale Tailrace Total Dissolved Gas Saturation Hourly - May 2016
Percent Gas Saturation
115
110
105
100
95
90
5/1
5/6
5/11
5/16
5/21
5/26
5/31
Date

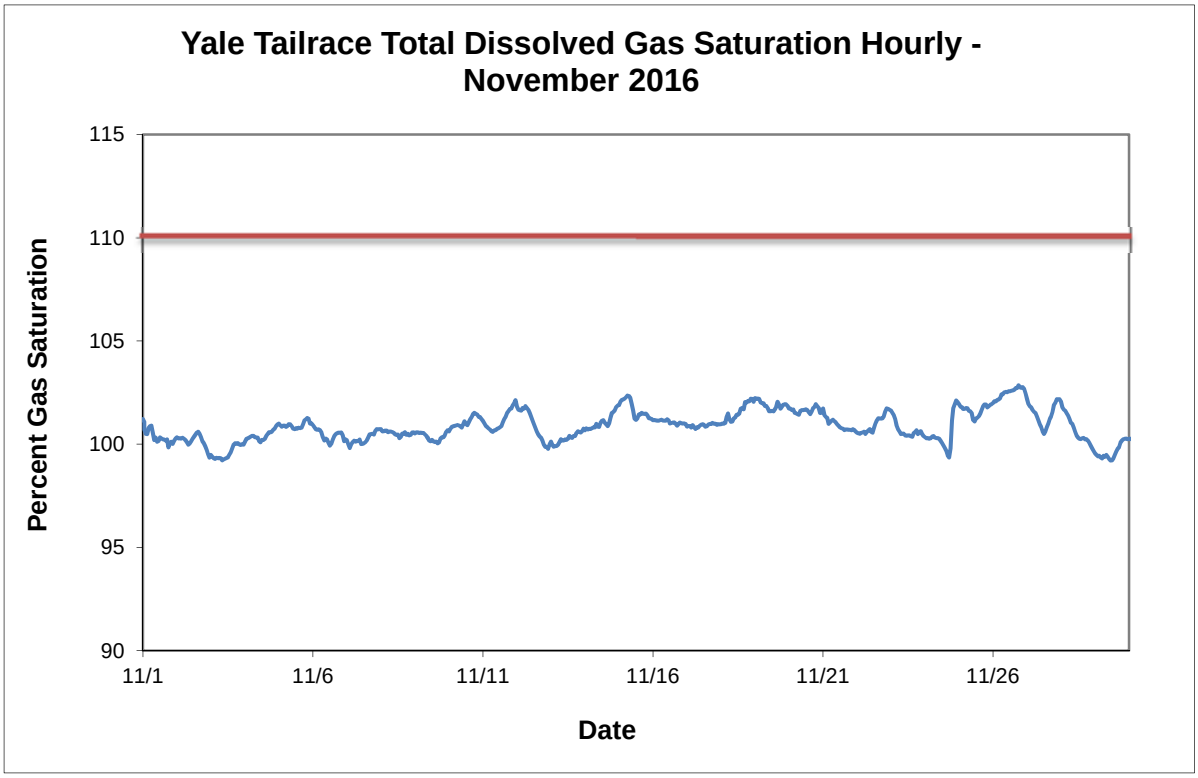

Yale Tailrace Total Dissolved Gas Saturation Hourly - June 2016
Percent Gas Saturation
115
110
105
100
95
90
6/1
6/6
6/11
6/16
6/21
6/26
Date

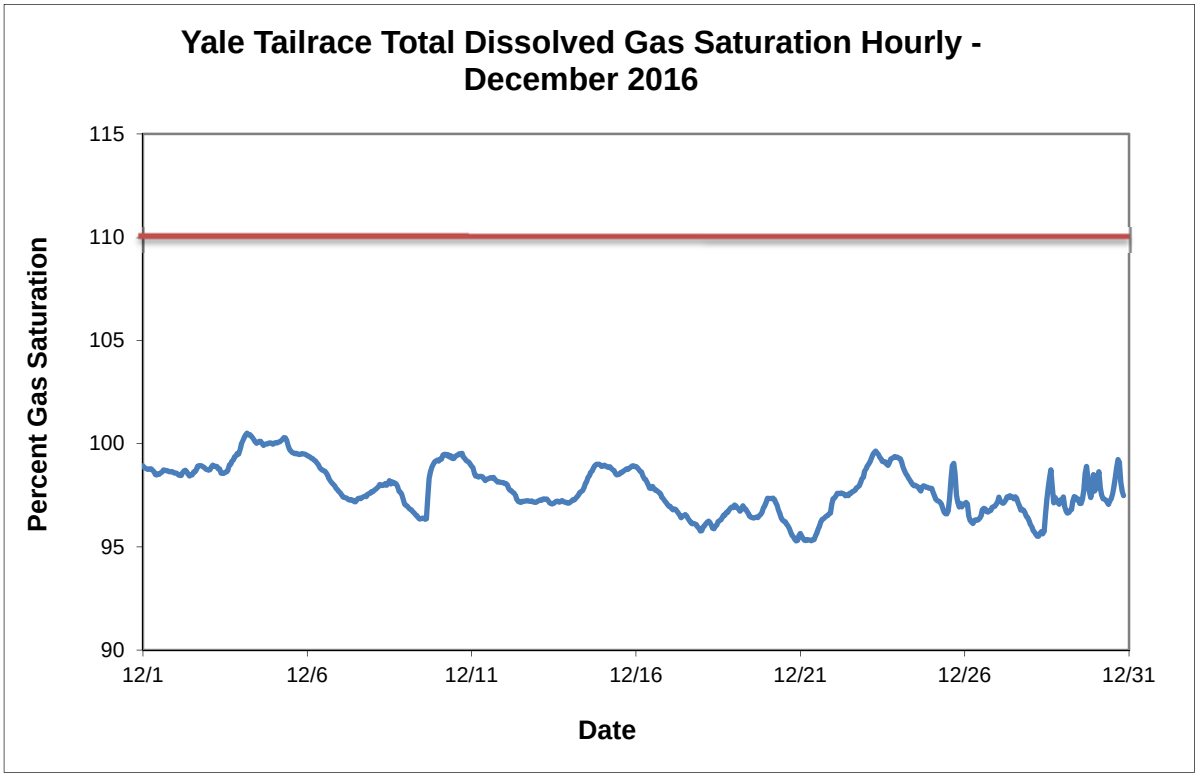

Yale Tailrace Total Dissolved Gas Saturation Hourly - July 2016
Percent Gas Saturation
115
110
105
100
95
90
7/1
7/6
7/11
7/16
7/21
7/26
7/31
Date

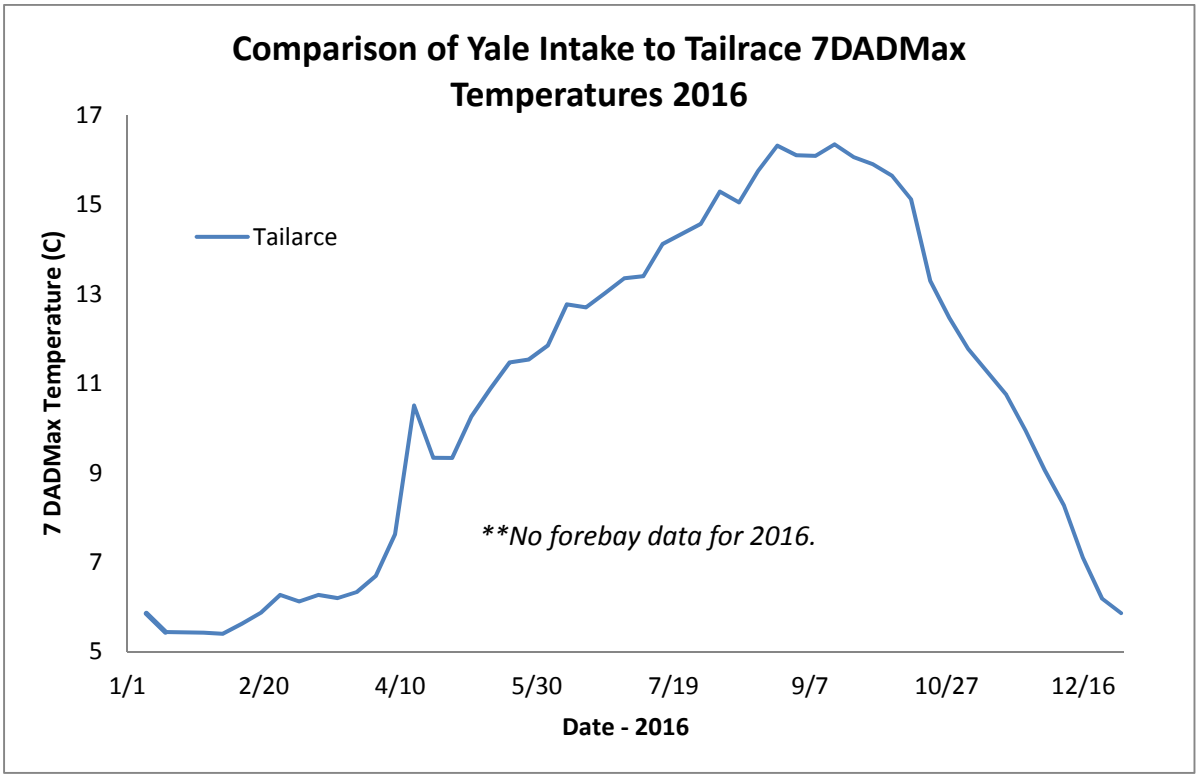

Yale Tailrace Total Dissolved Gas Saturation Hourly - August 2016
Percent Gas Saturation
115
110
105
100
95
90
8/1
8/6
8/11
8/16
8/21
8/26
8/31
Date

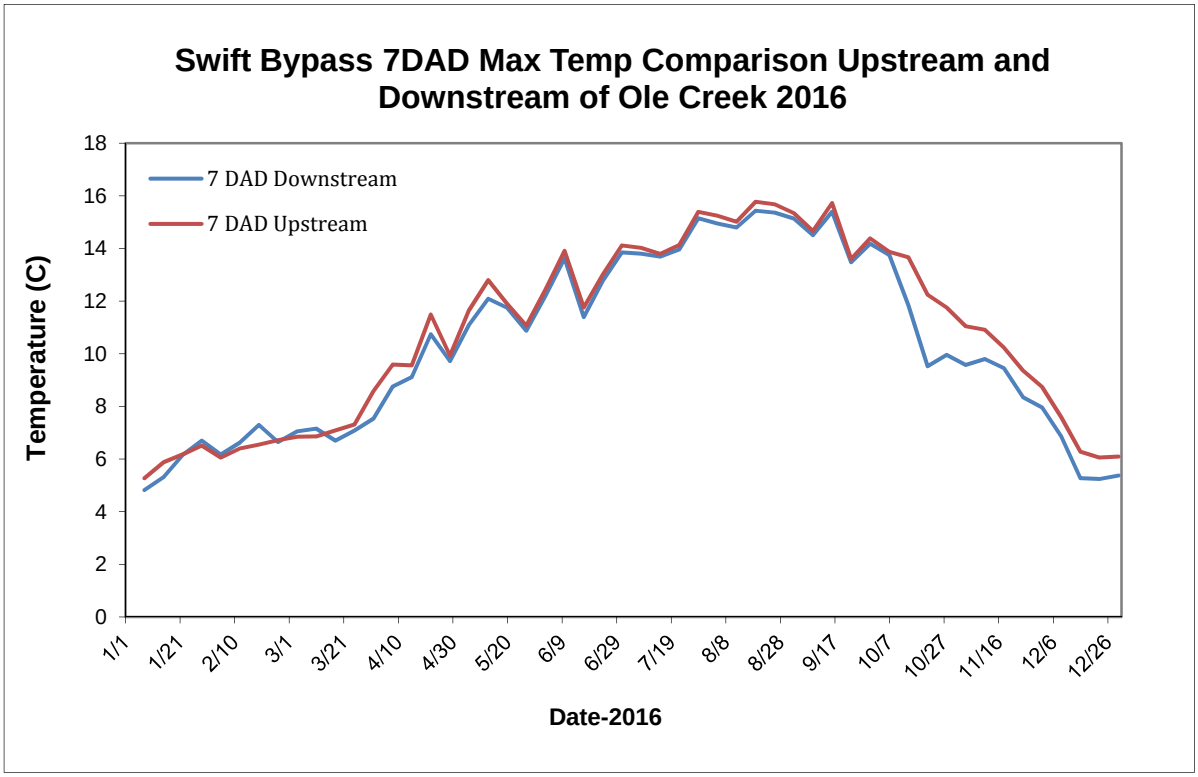

Yale Tailrace Total Dissolved Gas Saturation Hourly - September 2016
Percent Gas Saturation
115
110
105
100
95
90
9/1
9/6
9/11
9/16
9/21
9/26
Date


Yale Tailrace Total Dissolved Gas Saturation Hourly - October 2016
Percent Gas Saturation
115
110
105
100
95
90
10/1
10/6
10/11
10/16
10/21
10/26
10/31
Date

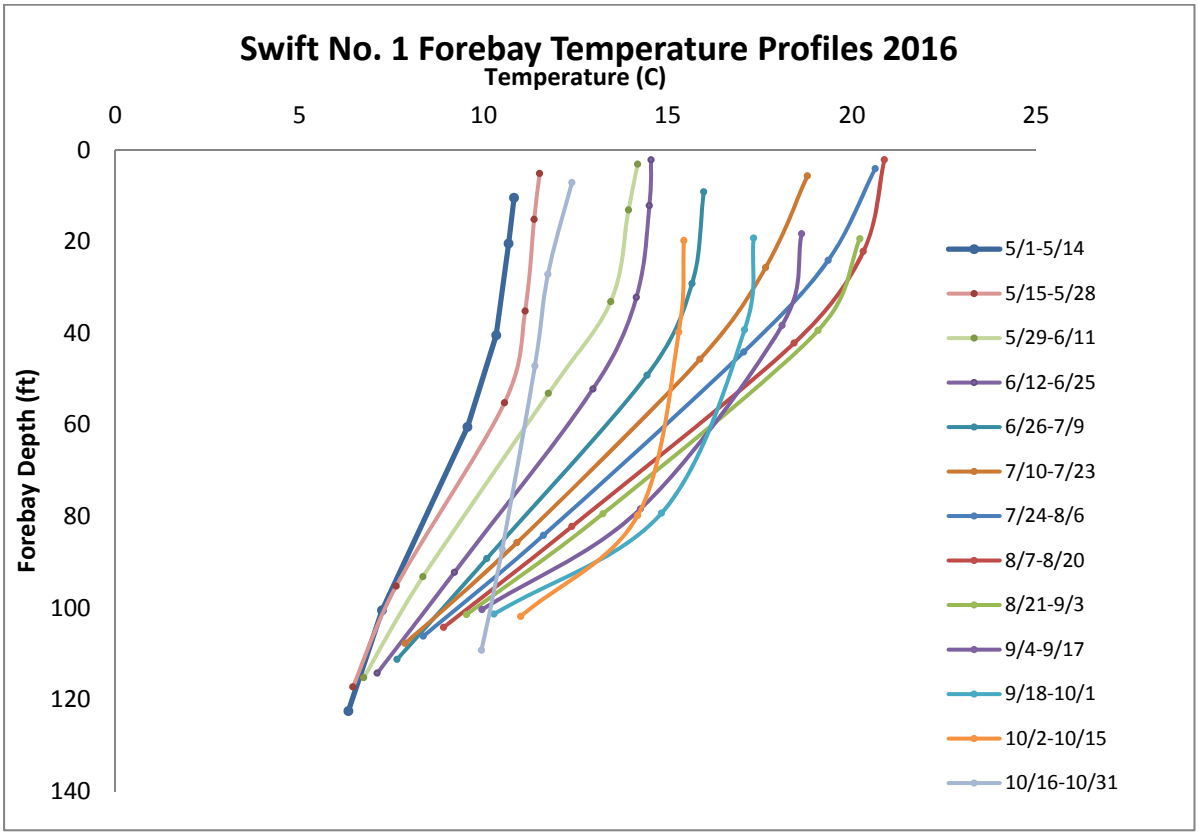

Yale Tailrace Total Dissolved Gas Saturation Hourly - November 2016
Percent Gas Saturation
115
110
105
100
95
90
11/1
11/6
11/11
11/16
11/21
11/26
Date

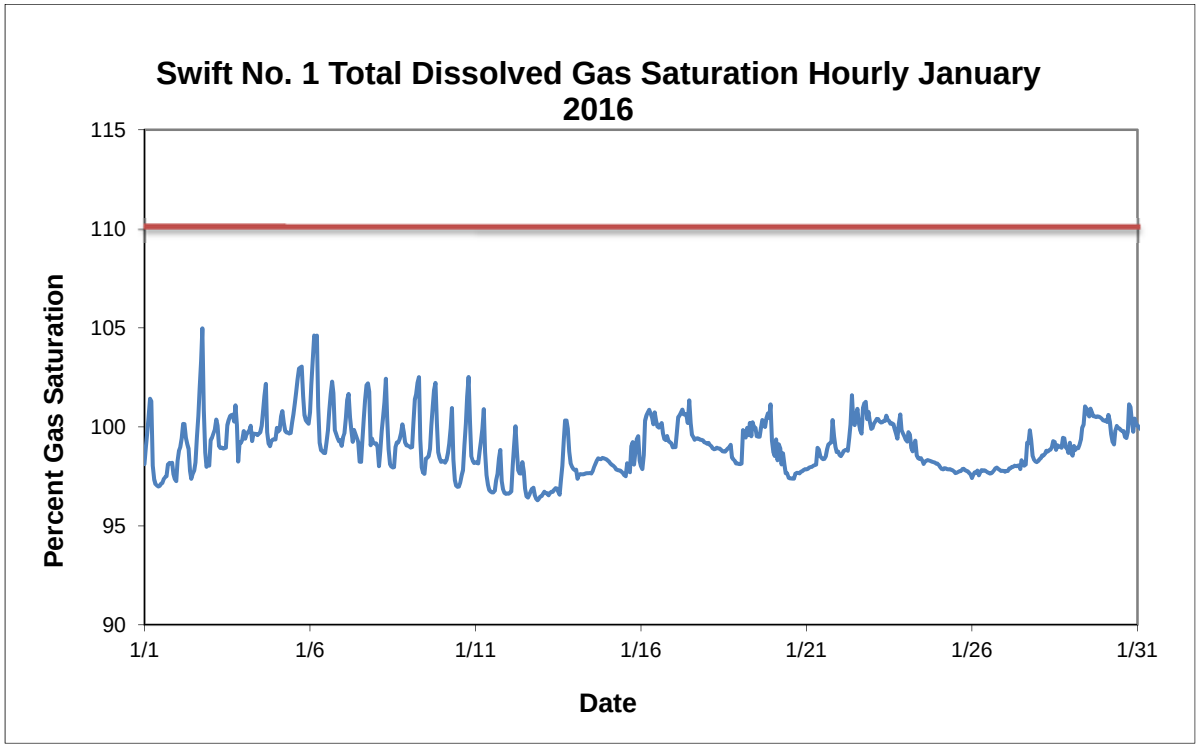

Yale Tailrace Total Dissolved Gas Saturation Hourly - December 2016
Percent Gas Saturation
115
110
105
100
95
90
12/1
12/6
12/11
12/16
12/21
12/26
12/31
Date

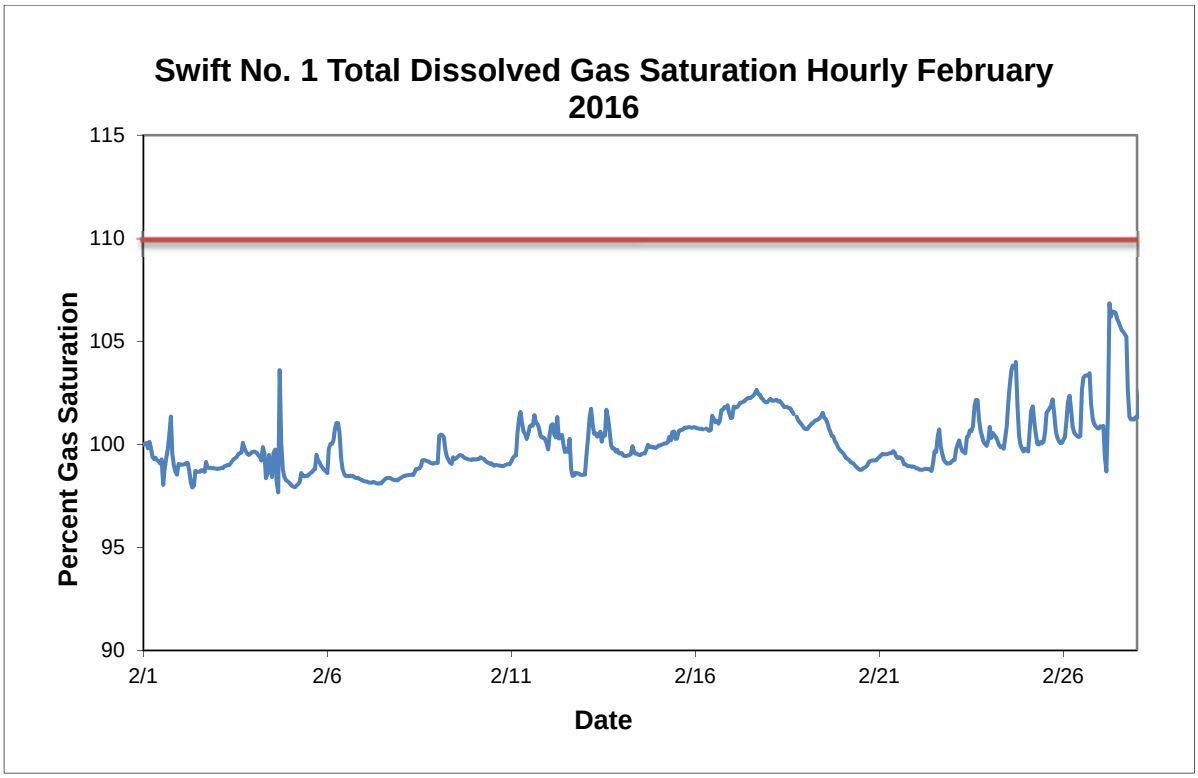

Comparison of Yale Intake to Tailrace 7DADMax Temperatures 2016
7 DADMax Temperature (C)
17
15
13
11
9
7
5
Tailarce
**No forebay data for 2016.
1/1
2/20
4/10
5/30
7/19
9/7
10/27
12/16
Date - 2016

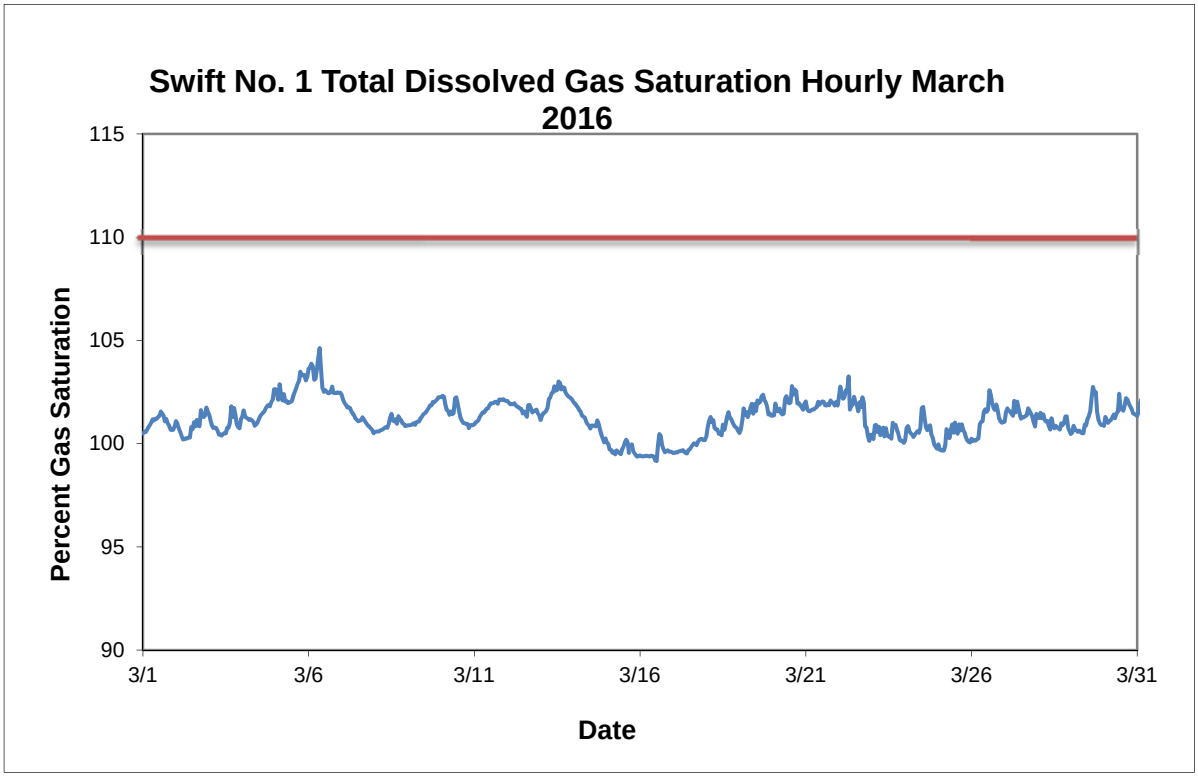

Swift Bypass 7DAD Max Temp Comparison Upstream and Downstream of Ole Creek 2016
7 DAD Downstream
7 DAD Upstream
Temperature (C)
0
2
4
6
8
10
12
14
16
18
1/1
1/21
2/10
3/1
3/21
4/10
4/30
5/20
6/9
6/29
7/19
8/8
8/28
9/17
10/7
10/27
11/16
12/6
12/26
Date-2016

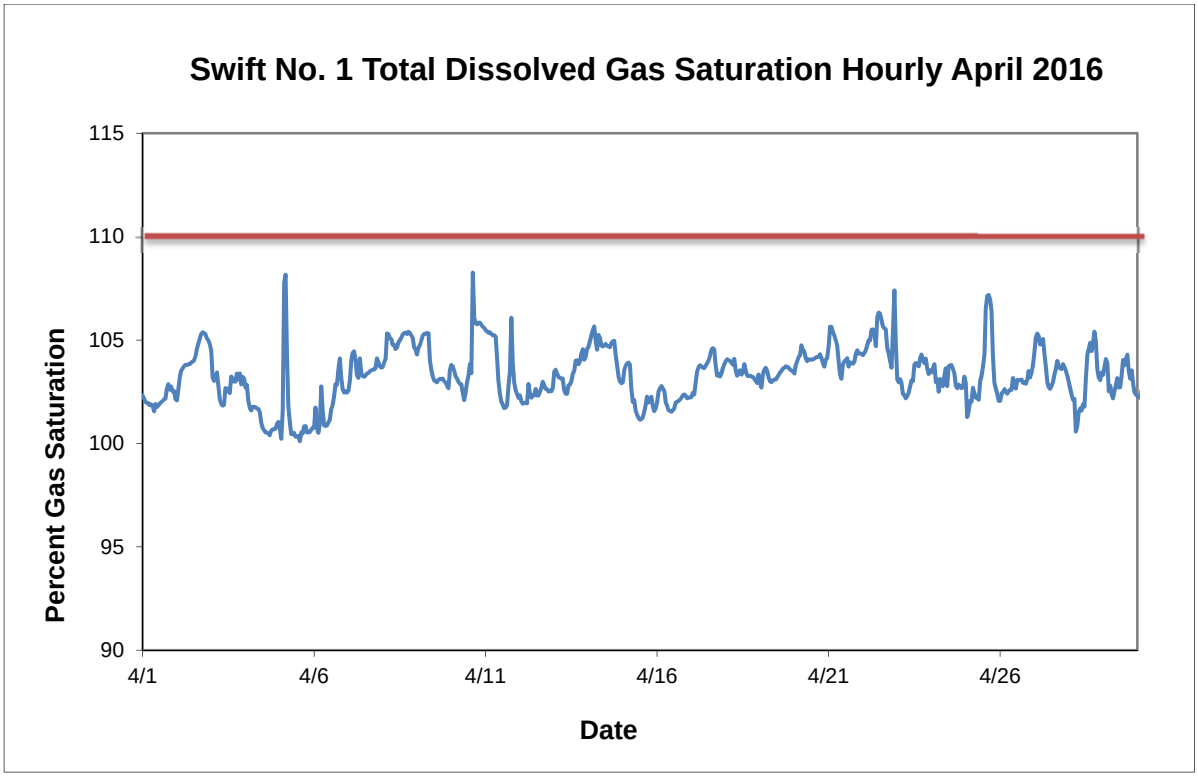
Attachment H
Swift No. 1 Water Quality Graphs

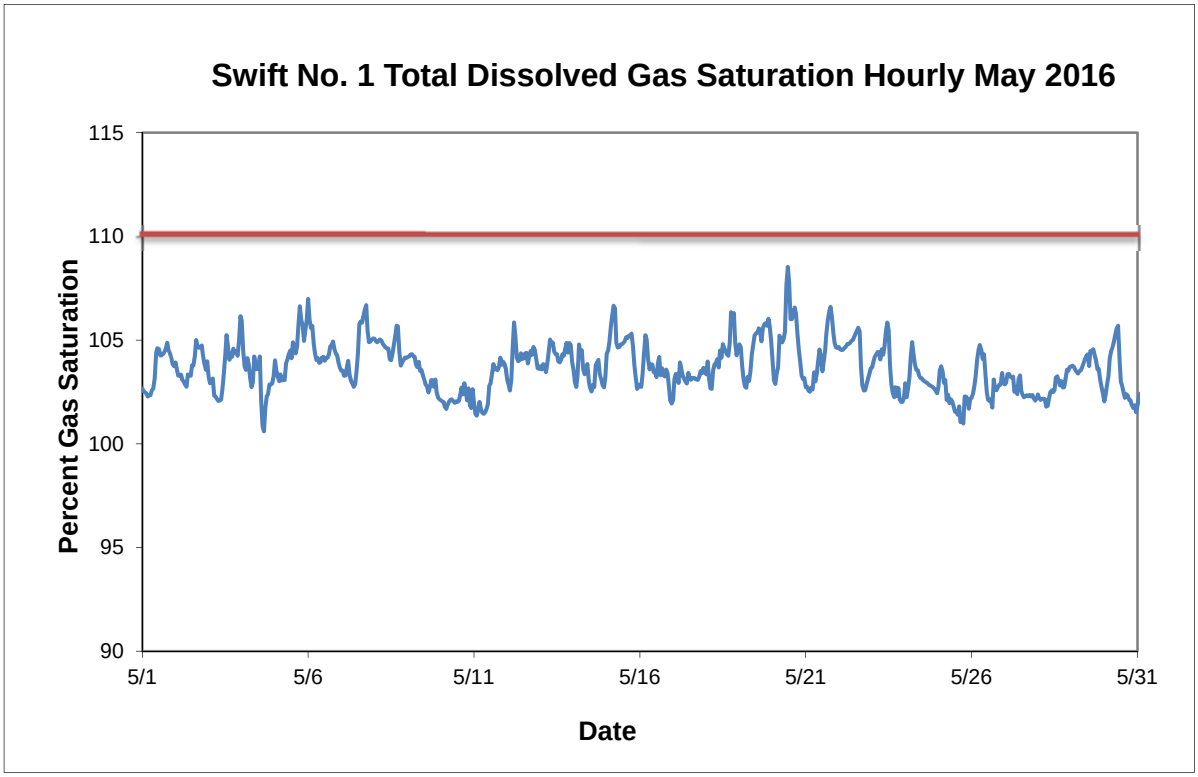

Swift No. 1 Forebay Temperature Profiles 2016
Temperature (C)
0
5
10
15
20
25
Forebay Depth (ft)
0
20
40
60
80
100
120
140
5/1-5/14
5/15-5/28
5/29-6/11
6/12-6/25
6/26-7/9
7/10-7/23
7/24-8/6
8/7-8/20
8/21-9/3
9/4-9/17
9/18-10/1
10/2-10/15
10/16-10/31

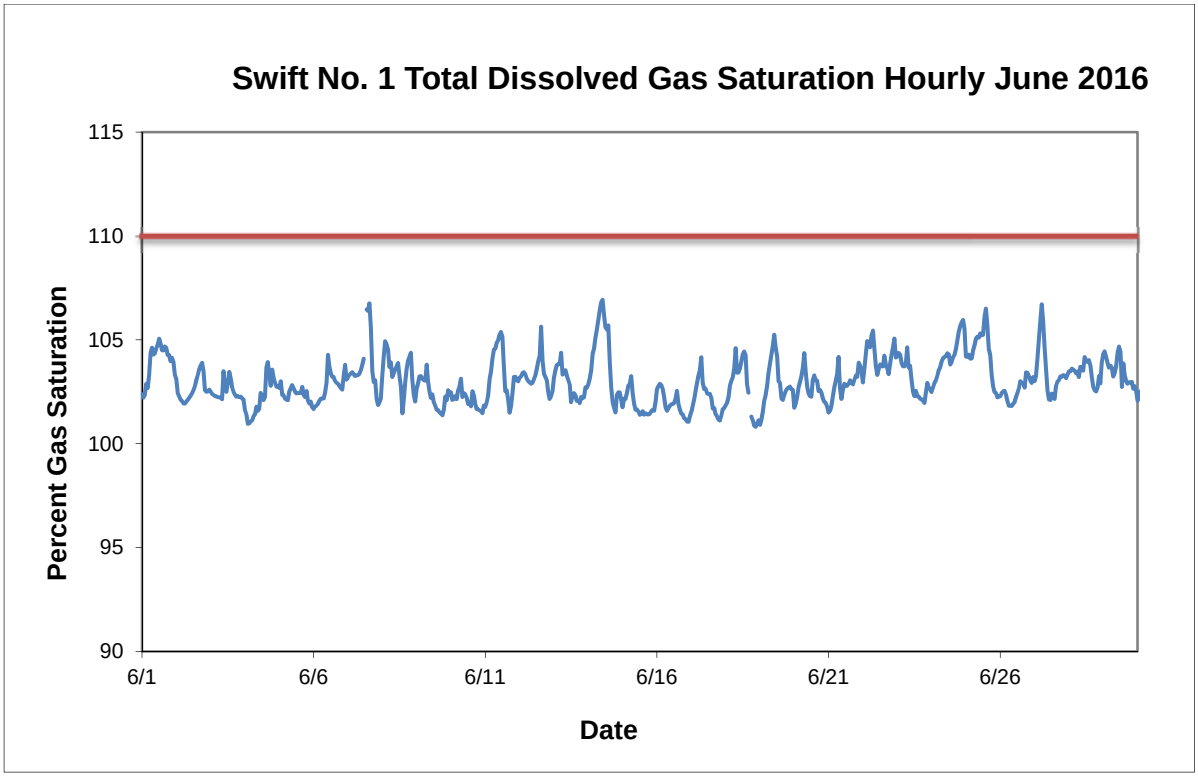

Swift No. 1 Total Dissolved Gas Saturation Hourly January 2016
Percent Gas Saturation
115
110
105
100
95
90
1/1
1/6
1/11
1/16
1/21
1/26
1/31
Date

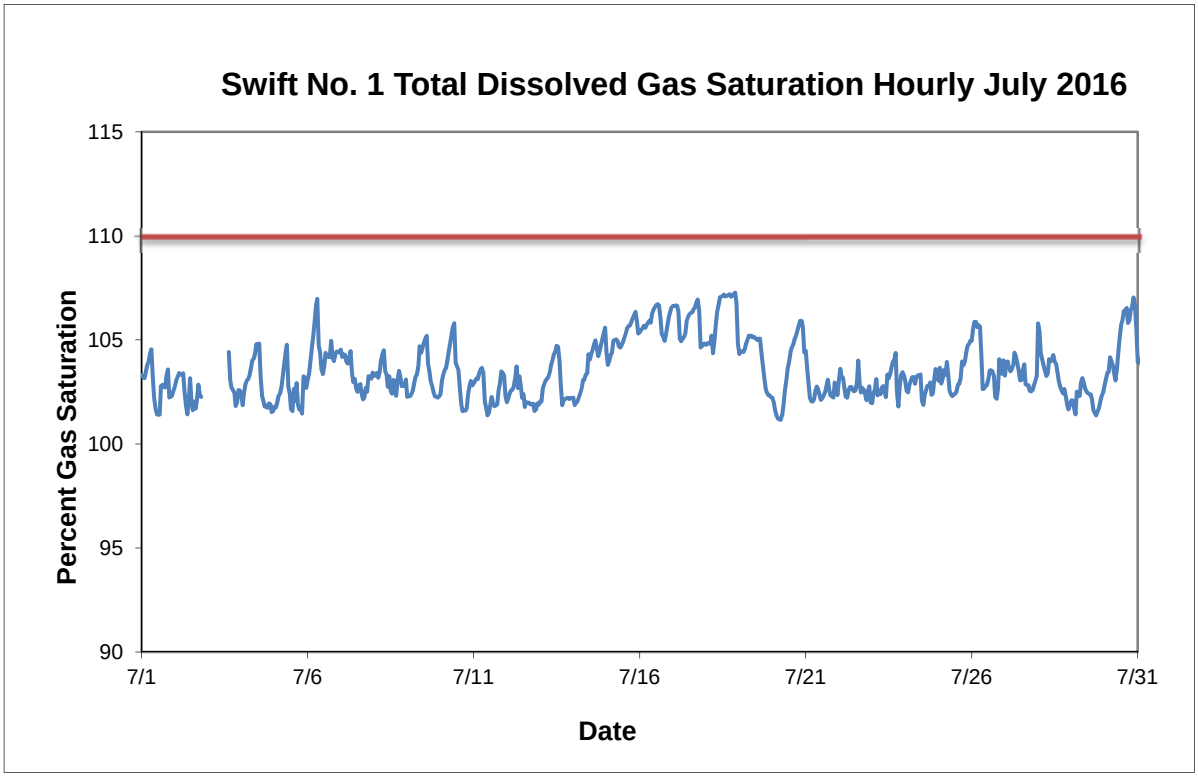

Swift No. 1 Total Dissolved Gas Saturation Hourly February 2016
Percent Gas Saturation
115
110
105
100
95
90
2/1
2/6
2/11
2/16
2/21
2/26
Date

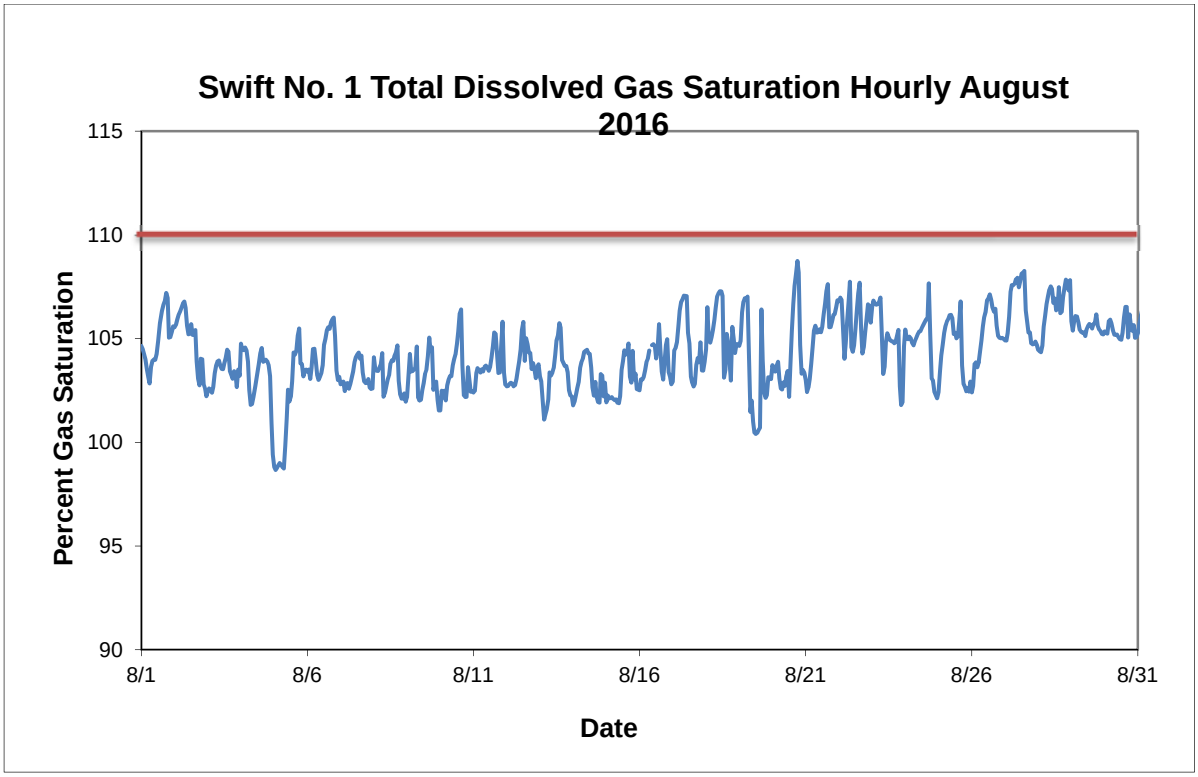

Swift No. 1 Total Dissolved Gas Saturation Hourly March 2016
Percent Gas Saturation
115
110
105
100
95
90
3/1
3/6
3/11
3/16
3/21
3/26
3/31
Date

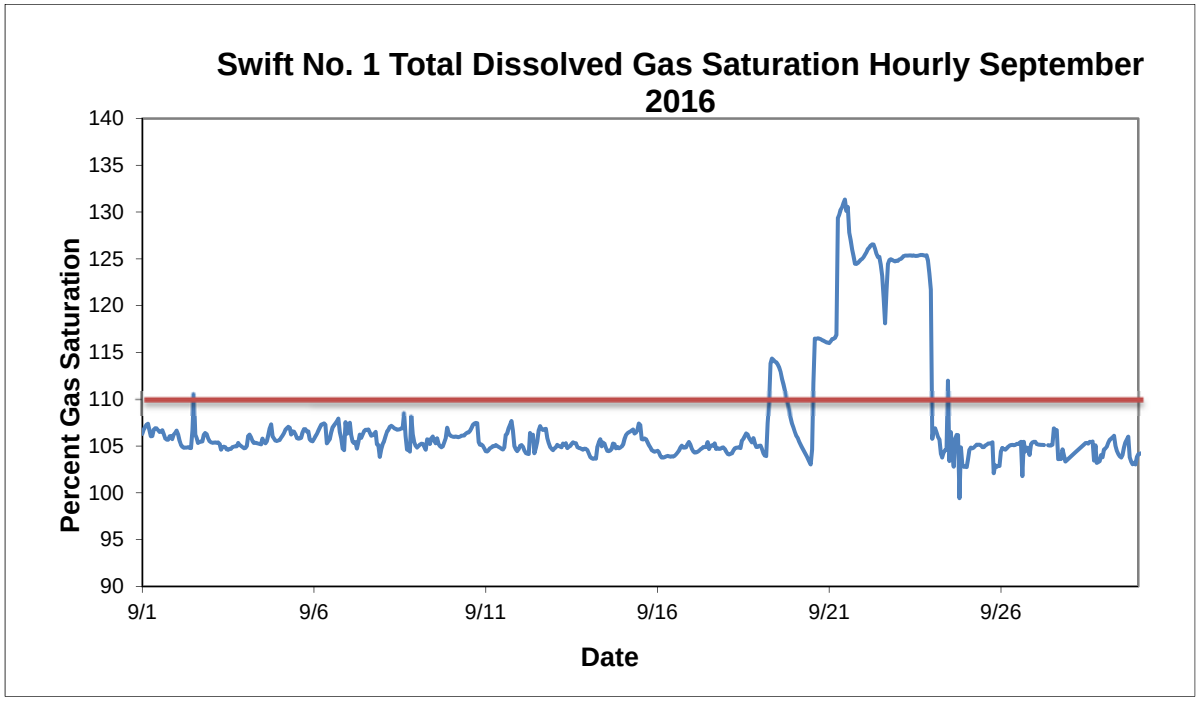

Swift No. 1 Total Dissolved Gas Saturation Hourly April 2016
Percent Gas Saturation
115
110
105
100
95
90
4/1
4/6
4/11
4/16
4/21
4/26
Date

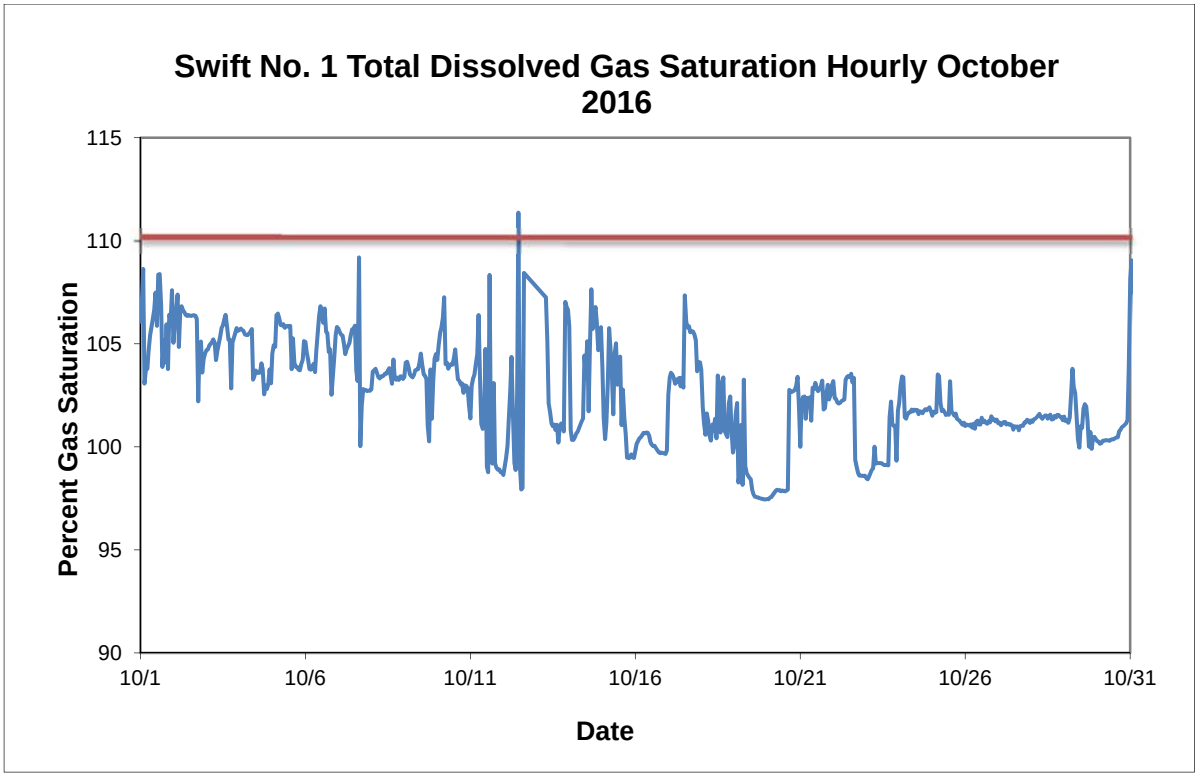

Swift No. 1 Total Dissolved Gas Saturation Hourly May 2016
Percent Gas Saturation
115
110
105
100
95
90
5/1
5/6
5/11
5/16
5/21
5/26
5/31
Date

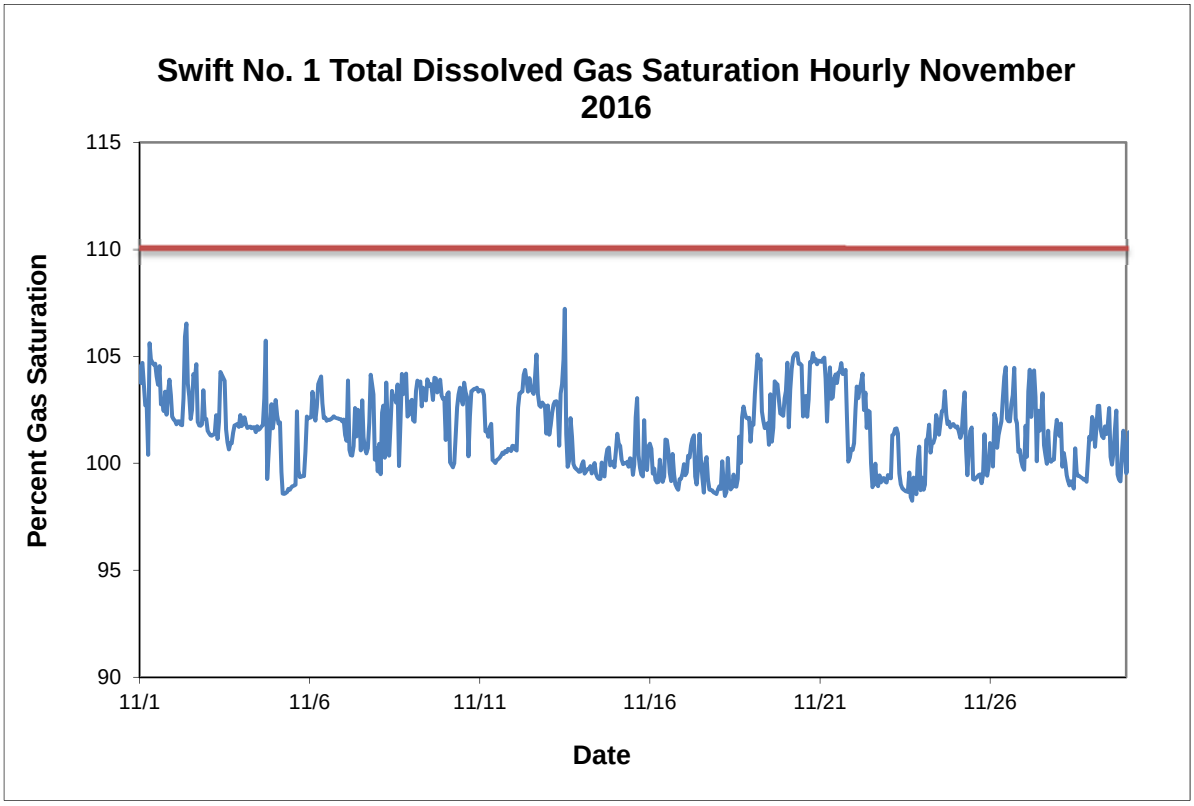

Swift No. 1 Total Dissolved Gas Saturation Hourly June 2016
Percent Gas Saturation
115
110
105
100
95
90
6/1
6/6
6/11
6/16
6/21
6/26
Date

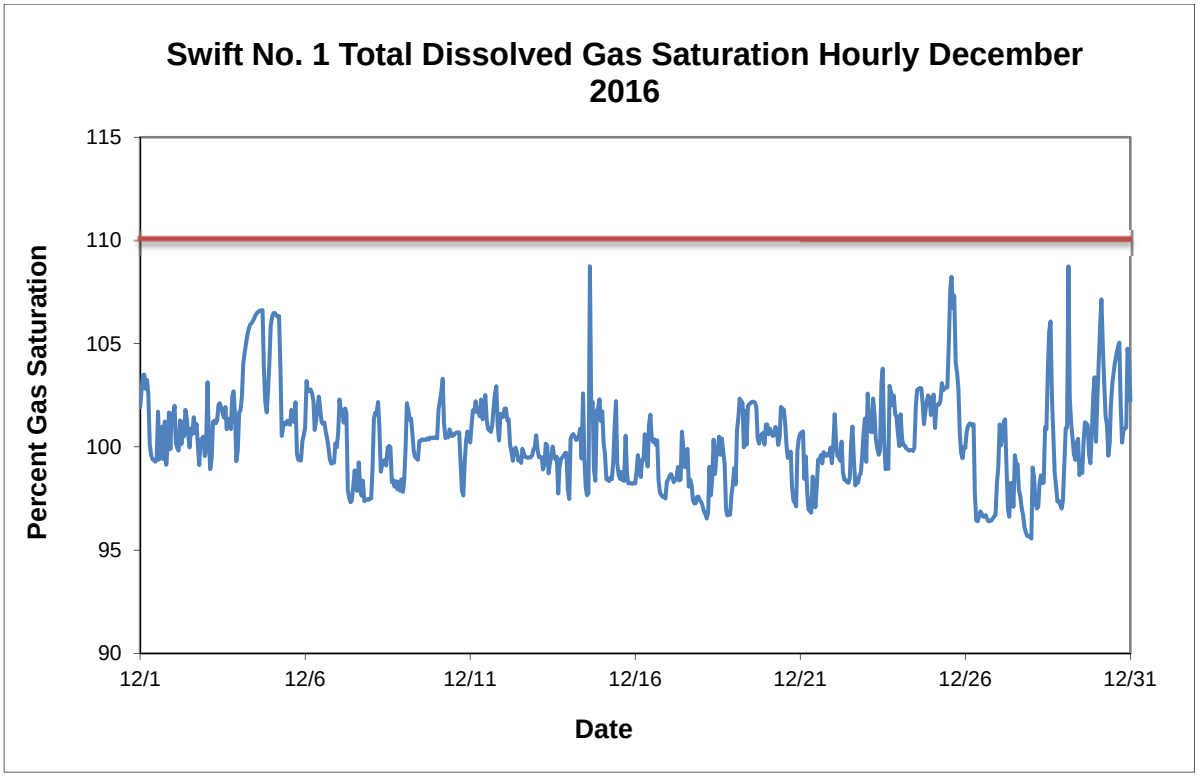

Swift No. 1 Total Dissolved Gas Saturation Hourly July 2016
Percent Gas Saturation
115
110
105
100
95
90
7/1
7/6
7/11
7/16
7/21
7/26
7/31
Date

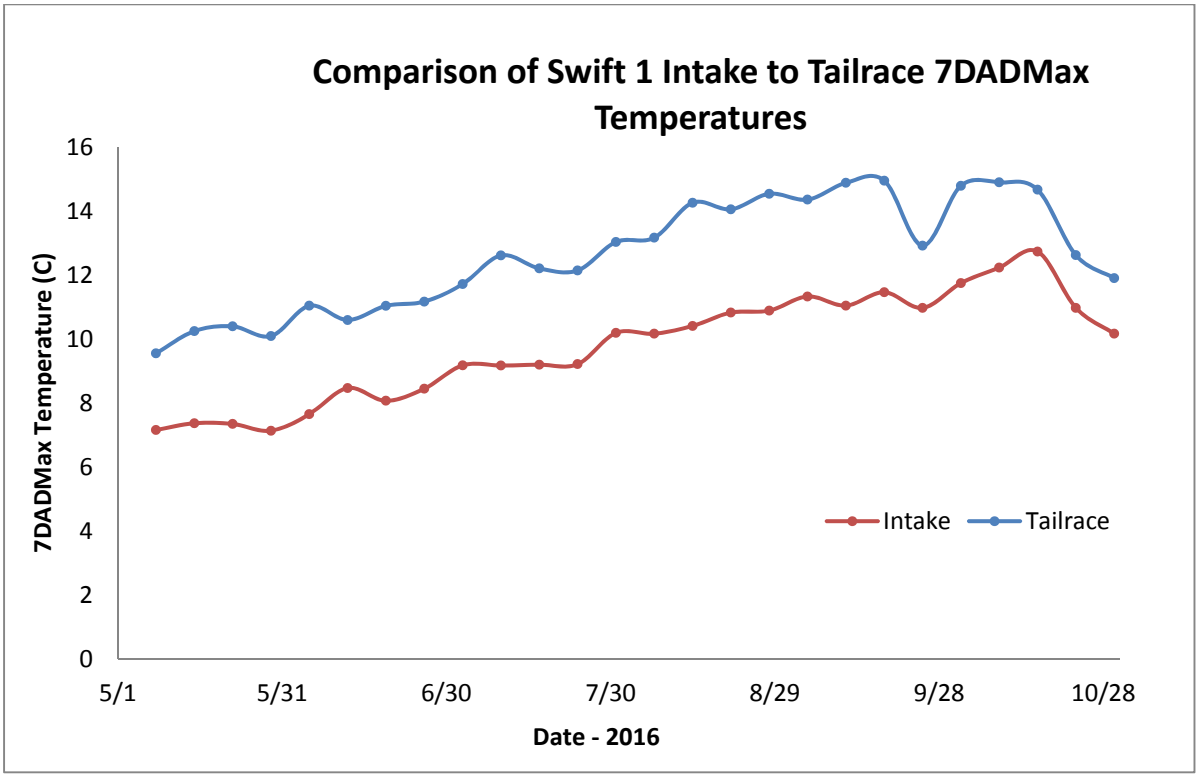

Swift No. 1 Total Dissolved Gas Saturation Hourly August 2016
Percent Gas Saturation
115
110
105
100
95
90
8/1
8/6
8/11
8/16
8/21
8/26
8/31
Date


Swift No. 1 Total Dissolved Gas Saturation Hourly September 2016
Percent Gas Saturation
140
135
130
125
120
115
110
105
100
95
90
9/1
9/6
9/11
9/16
9/21
9/26
Date

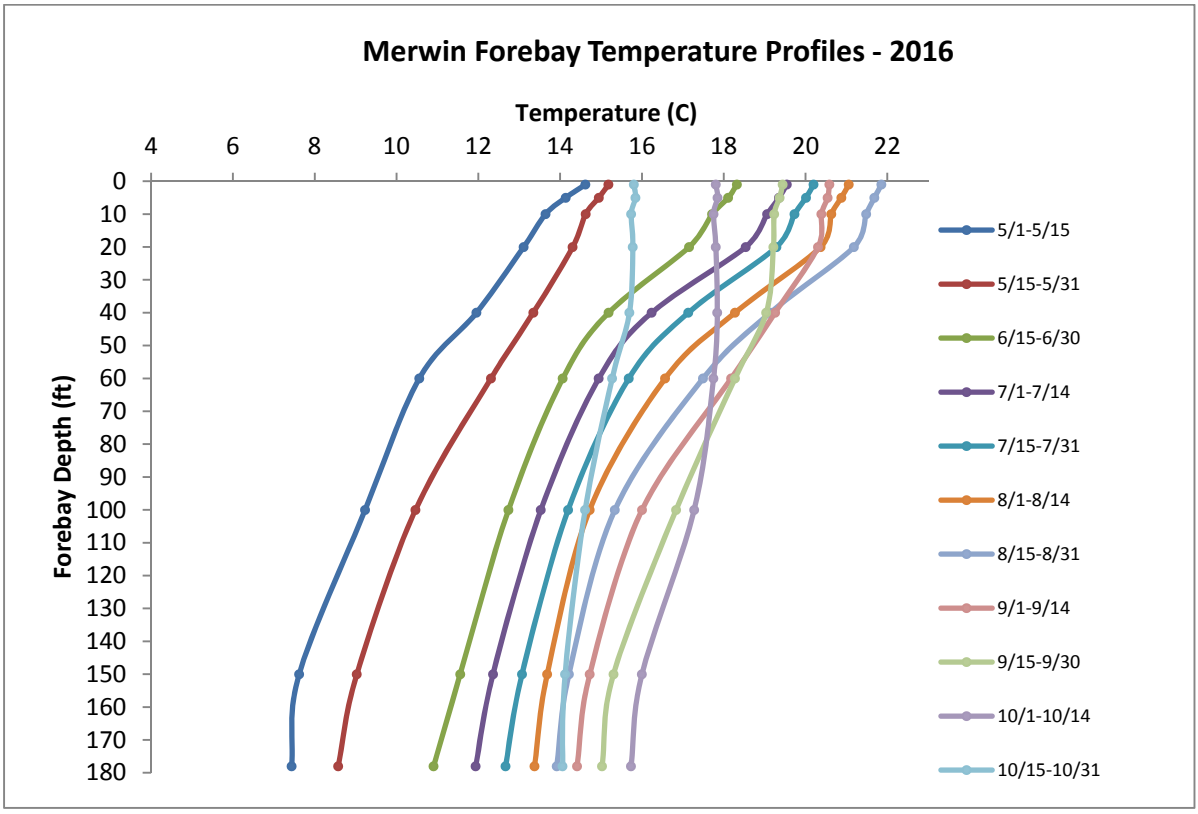

Swift No. 1 Total Dissolved Gas Saturation Hourly October 2016
Percent Gas Saturation
115
110
105
100
95
90
10/1
10/6
10/11
10/16
10/21
10/26
10/31
Date

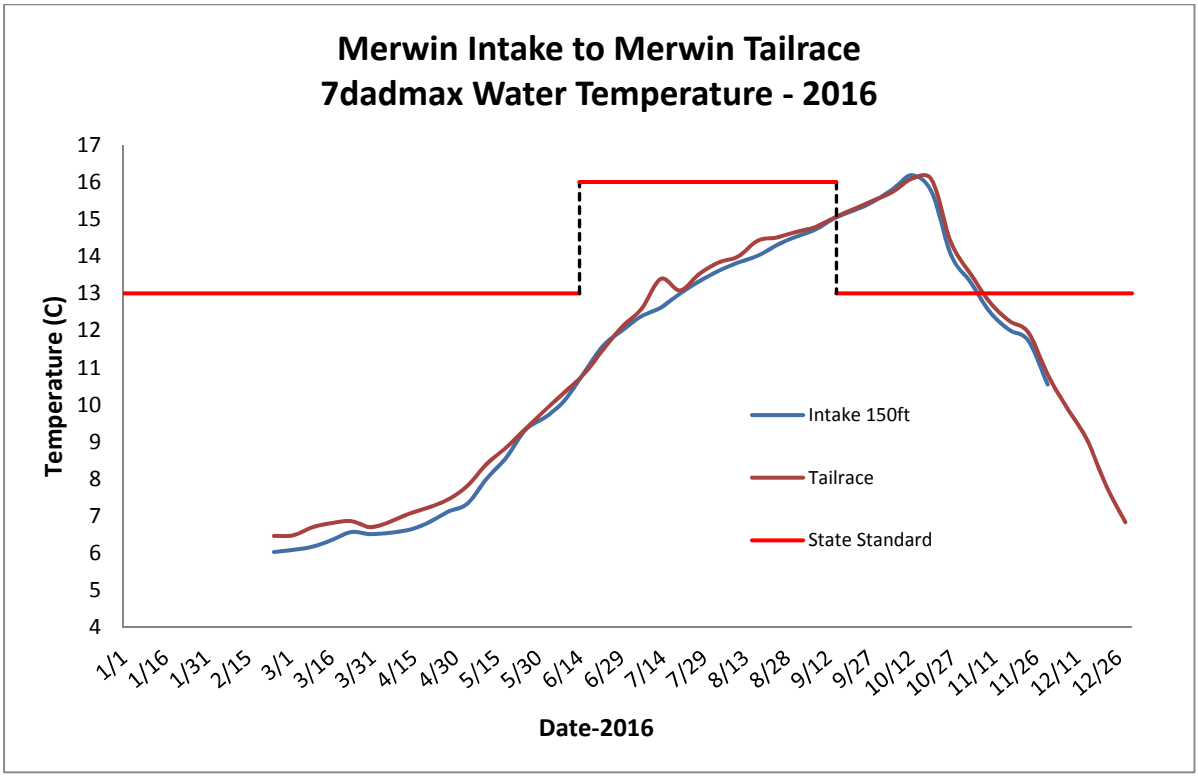

Swift No. 1 Total Dissolved Gas Saturation Hourly November 2016
Percent Gas Saturation
115
110
105
100
95
90
11/1
11/6
11/11
11/16
11/21
11/26
Date

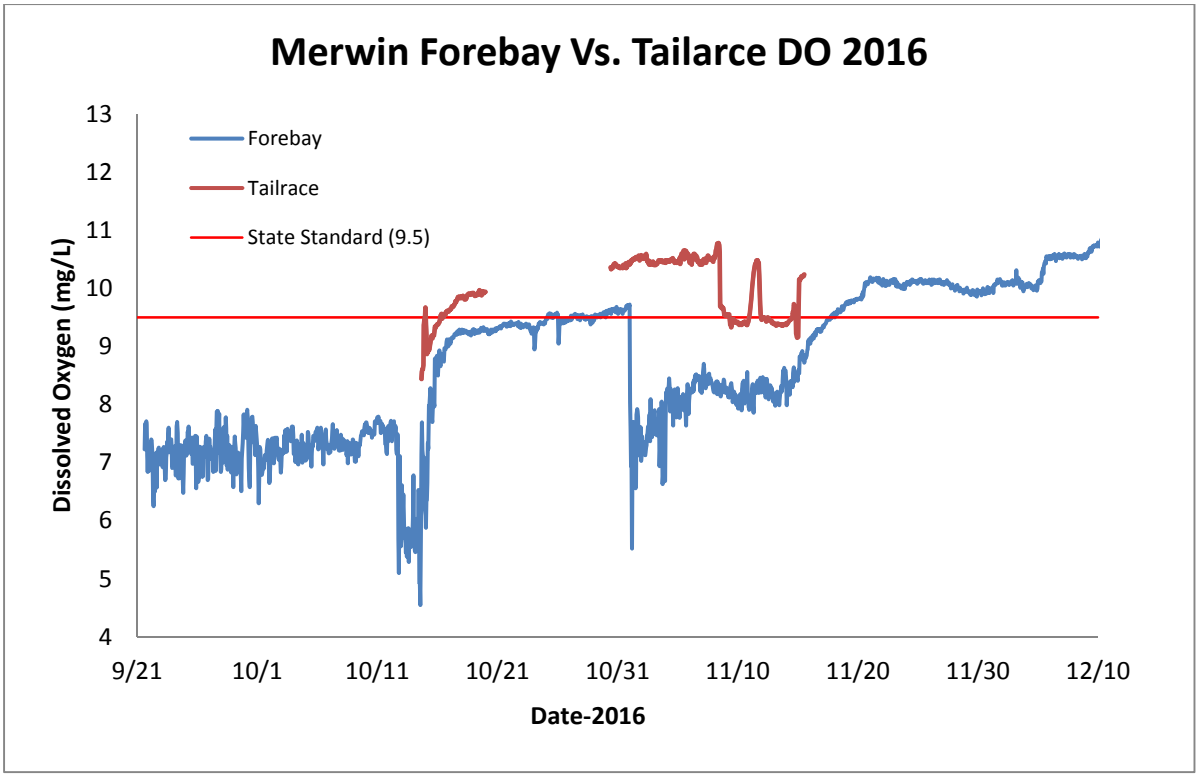

Swift No. 1 Total Dissolved Gas Saturation Hourly December 2016
Percent Gas Saturation
115
110
105
100
95
90
12/1
12/6
12/11
12/16
12/21
12/26
12/31
Date


Comparison of Swift 1 Intake to Tailrace 7DADMax Temperatures
7DADMax Temperature (C)
16
14
12
10
8
6
4
2
0
5/1
5/31
6/30
7/30
8/29
9/28
10/28
Date - 2016
Intake
Tailrace

Attachment I
Merwin Water Quality Graphs


Merwin Forebay Temperature Profiles - 2016
Temperature (C)
4
6
8
10
12
14
16
18
20
22
Forebay Depth (ft)
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
5/1-5/15
5/15-5/31
6/15-6/30
7/1-7/14
7/15-7/31
8/1-8/14
8/15-8/31
9/1-9/14
9/15-9/30
10/1-10/14
10/15-10/31


Merwin Intake to Merwin Tailrace
7dadmax Water Temperature - 2016
Temperature (C)
17
16
15
14
13
12
11
10
9
8
7
6
5
4
Intake 150ft
Tailrace
State Standard
1/1
1/16
1/31
2/15
3/1
3/16
3/31
4/15
4/30
5/15
5/30
6/14
6/29
7/14
7/29
8/13
8/28
9/12
9/27
10/12
10/27
11/11
11/26
12/11
12/26
Date-2016


Merwin Forebay Vs. Tailarce DO 2016
Dissolved Oxygen (mg/L)
13
12
11
10
9
8
7
6
5
4
Forebay
Tailrace
State Standard (9.5)
9/21
10/1
10/11
10/21
10/31
11/10
11/20
11/30
12/10
Date-2016

Attachment J is saved as a separate file.

Attachment J
Yale Reservoir Kokanee 2016 Escapement Report

No Aquatic Fund Projects were completed in 2016.

Attachment K
Aquatic Fund Project Close-Out Reports

Attachment L is saved as a separate file.

Attachment L
Lewis River Wildlife Habitat Management Plan 2017 Annual Plan

Attachment M is saved as a separate file.

Attachment M
Wildlife Habitat Management Plan Annual Progress Report for Operation Phase 2016

Attachment N
2016 Road Maintenance and Abandonment

PacifiCorp
2016
Road Maintenance & Abandonment
Work Completed for Merwin, Yale & Swift

Background

The Washington State Legislature directed the state Forest Practices Board through the Salmon Recovery Act, 1999 Laws Sp. Sess. Ch. 4, to change forest practices rules relating to roads consistent with the April 29, 1999 Forests and Fish Report. This act was passed to provide substantial and sufficient contributions to salmon recovery and water quality enhancement, as well as, satisfy requirements of the federal Endangered Species Act and the federal Clean Water Act in forested areas.

Effective March 20, 2000, the Forest Practices (FP) Board adopted significant emergency changes and additions to the forest road construction and maintenance rules (Chapter 222-24 WAC, or current FP rules, or the rules). These emergency changes are designed to ensure that forest roads in Washington State meet standards recommended in the April 29, 1999 Forests and Fish Report, and requirements in the federal Endangered Species and Clean Water Acts.

Based on current FP rules, forest roads must be used and managed in a manner not to threaten public safety, and prevent potential or actual damage to public resources.

2016 Work Accomplished

PacifiCorp completed work as planned towards improving road and culvert issues for its remaining projects. In 2016 PacifiCorp abandoned approximately 0.3miles of road on Yale Project lands along the south shore of Yale Lake (**Figure 16**). 2.4 miles of road were improved, including the replacement of two culvert causing fish blockages (**Figure 17**). An additional 8 cross drains were replaced or installed. One fish passage barrier was removed and another culvert was removed and the resulting trench left open for overflow from a pond to Yale Lake. One mile of new construction road was built in 2016 in the Yale RMB. An accomplishment report was submitted to the Washington State Department of Natural Resources. This section of road was abandoned to reduce unauthorized access issues that was contributing to erosion and reduced the potential for further road resource issues.

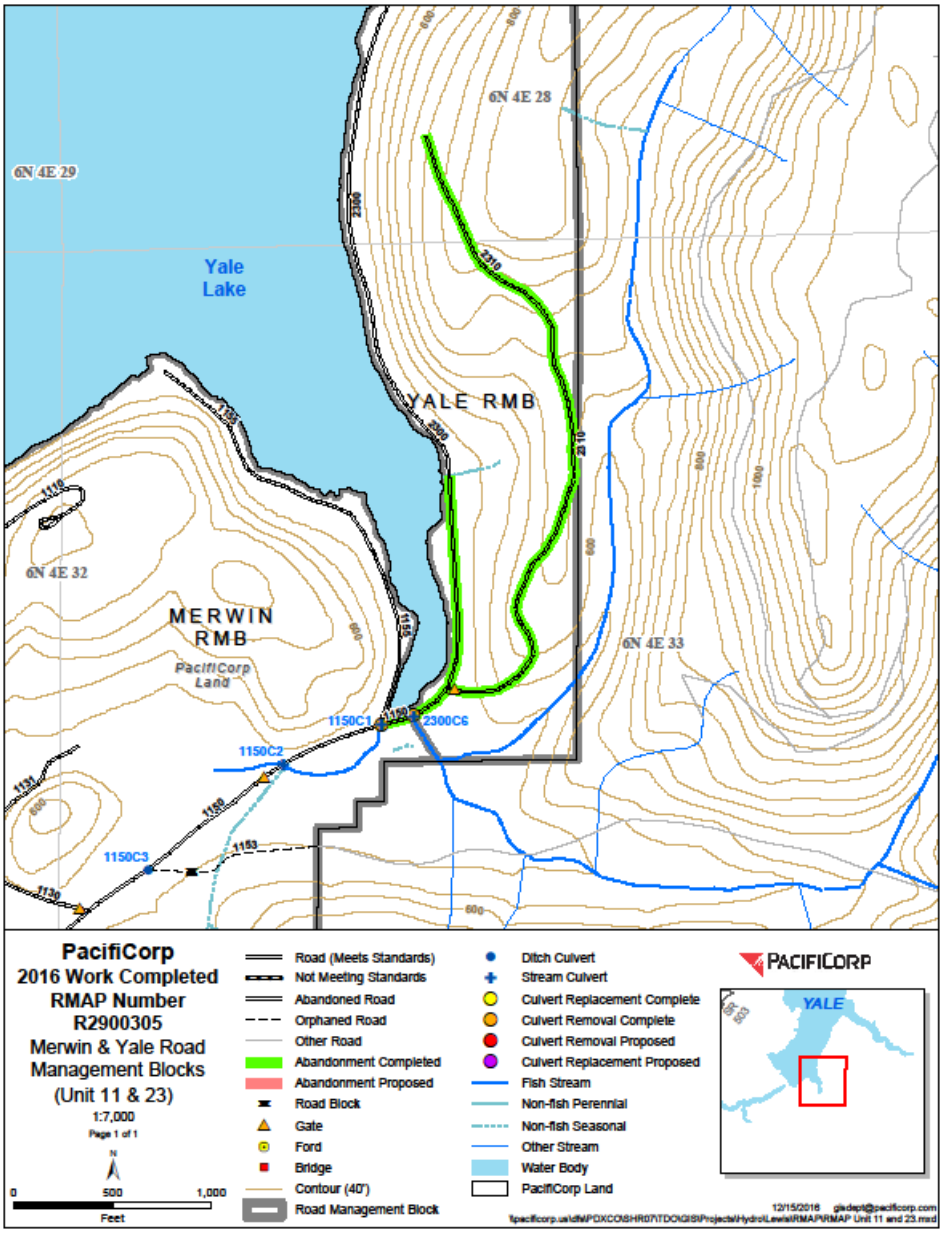


Figure 16. Road Abandonment in 2016.

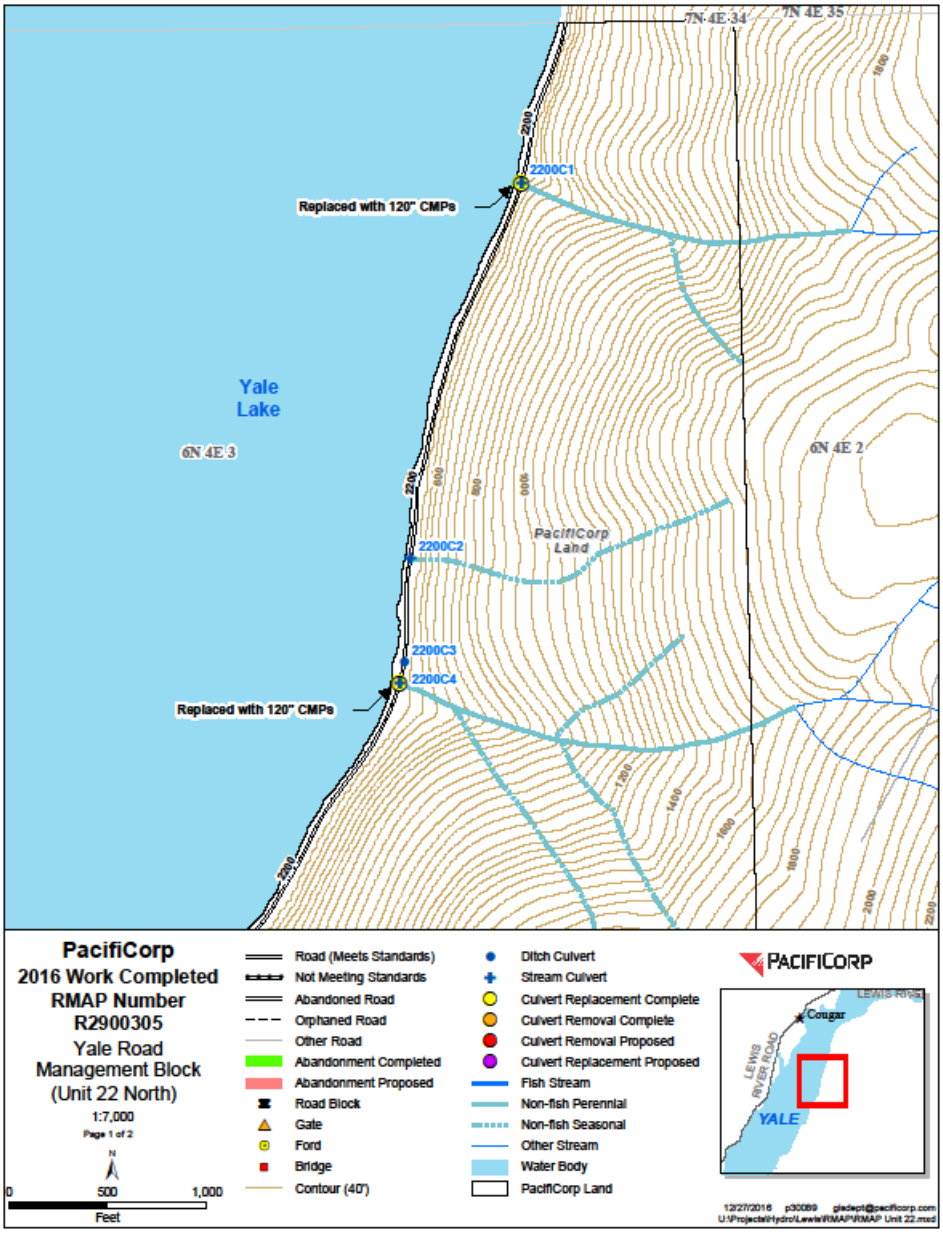


Figure 17. 2016 Culvert Replacement

To date, PacifiCorp has completed 100, 100, and 92% of the culvert improvements for Swift, Merwin and Yale land respectively on approximately 13,134 acres of land. PacifiCorp maintains approximately 96 miles of forest-use roads. Forest road mileage for each of the respective projects is; Merwin (40 miles), Yale (26 miles) and Swift (30 miles).

2016 Planned Road Maintenance

The remaining Merwin and Yale project road maintenance activities scheduled in 2017 includes abandoning 1.7 miles of road and removing one fish passage barrier and two culverts.

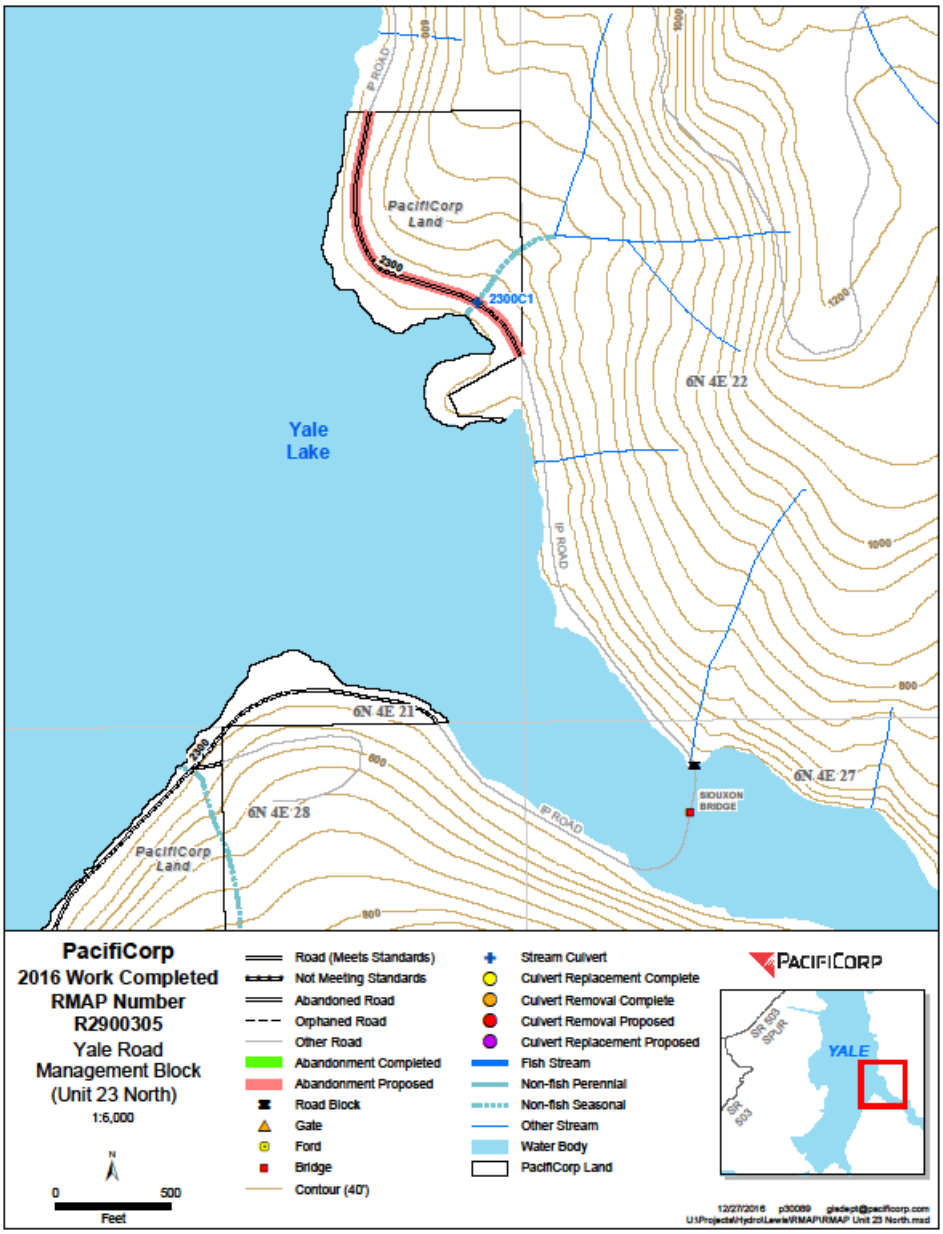


Figure 18. Proposed Road Abandonment

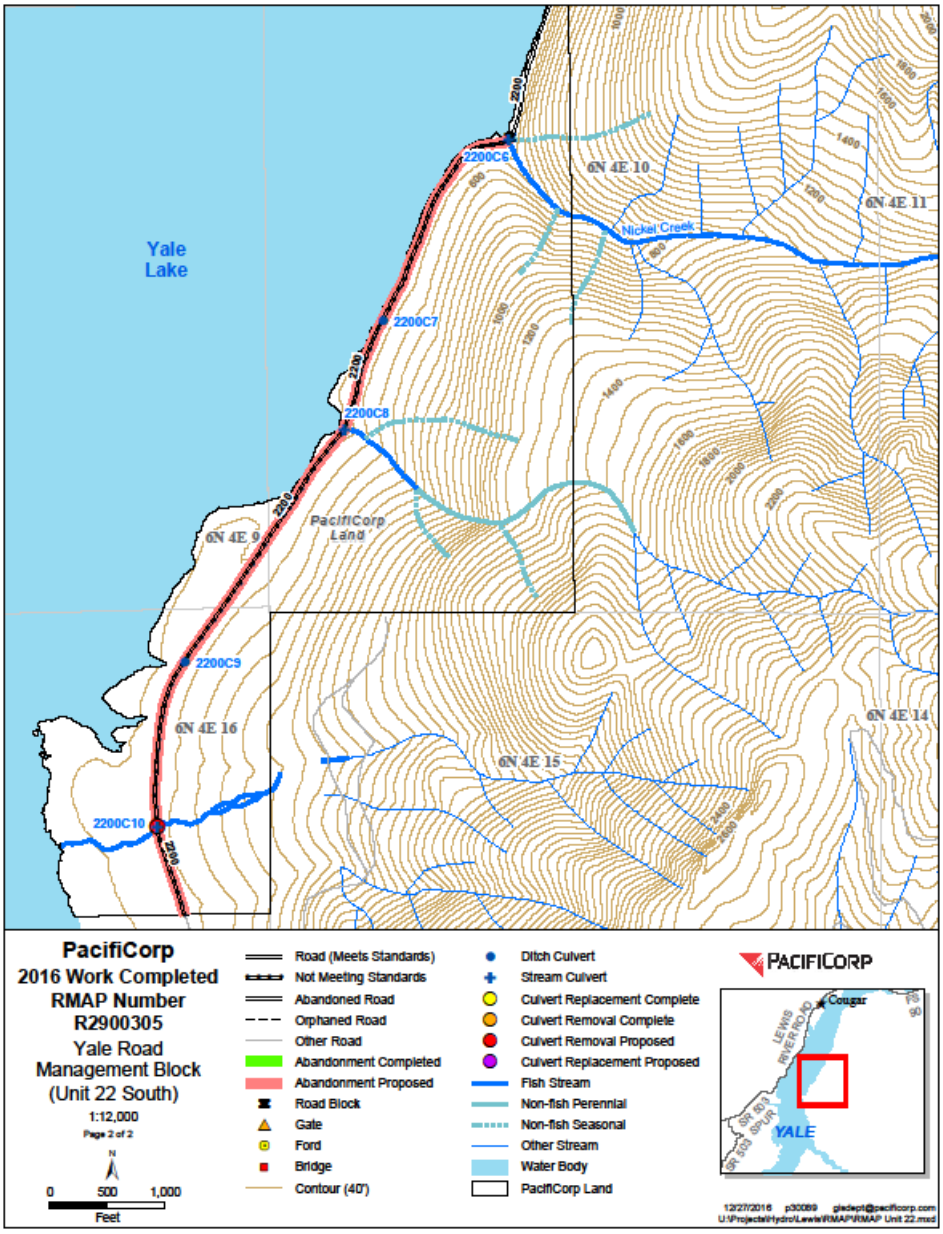


Figure 19. 2017 Culvert Removal

All of PacifiCorp's roads are inspected annually to identify maintenance issues. Additionally, monitoring of previously managed sites will be conducted to ensure vegetation is establishing were necessary.