NORTH UMPQUA HYDROELECTRIC PROJECT

FERC No. P-1927

Protection, Mitigation, and Enhancement Measures

2019 Annual Report

PACIFICORP

June 2020

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On the cover: North Umpqua River at confluence of Medicine Creek during Coho Salmon spawning season.

1.0 INTRODUCTION

Located on the west side of the Cascade mountain range in southern Oregon, the North Umpqua Hydroelectric Project (FERC No. P-1927; Project) consists of eight dams and power plants that have a combined capacity to generate 194 megawatts of power. The project was constructed between 1947 and 1956.

In the early 1990s, as the expiration of the first Federal Energy Regulatory Commission (FERC) license approached, PacifiCorp initiated the relicensing process with FERC. In June 2001, the relicensing process resulted in the development and signing of the North Umpqua Hydroelectric Project Settlement Agreement (Settlement Agreement, SA). The Settlement Agreement identifies annual reporting requirements ranging from fiduciary reporting to narrative descriptions of actions. This annual report documents a calendar year (January 2019 through December 2019) and fulfills reporting requirements of the following Settlement Agreement sections:

- SA Section 7.2.3 (amended) Gravel Augmentation Program Funding and Accounting—Written annual report describing the amounts deposited and disbursed;

- SA Section 8.3.5 (amended) North Umpqua River Habitat Restoration/Creation Project Funding and Accounting—Written annual report describing the amounts deposited and disbursed;

- SA Section 19.1.1.3 Tributary Enhancement Program Funding and Accounting—Written annual report describing the amounts deposited and disbursed;

- SA Section 19.3.1 Mitigation Fund Annual Reporting—Written annual report describing the amounts deposited and disbursed; and

- SA Section 21.4.2 Environmental Coordinator Reports—Written annual report on the activities of the RCC and on the implementation of the PM&E Measures.

1.1 Background

On June 13, 2001, PacifiCorp filed a Settlement Agreement pursuant to FERC Rule 602 (Title 18 Code of Federal Regulations § 385.602) to resolve issues concerning the relicensing of the North Umpqua Hydroelectric Project. Parties to the Settlement Agreement include PacifiCorp, the USDA Forest Service (USDA-FS), the USDI Fish and Wildlife Service (USFWS), the USDI Bureau of Land Management (BLM), the National Marine Fisheries Service (NMFS; now known as National Oceanic and Atmospheric Administration (NOAA) Fisheries), the Oregon Department of Environmental Quality (ODEQ), the Oregon Department of Fish and Wildlife (ODFW), and the Oregon Water Resources Department (OWRD), collectively referred to as the "Parties." As required by statute, FERC conducted a National Environmental Policy Act (NEPA) process that concluded with a Final Environmental Impact Statement (FEIS) issued in March 2003. Based on the findings of the FEIS, FERC developed new license articles for the Project.

FERC formally issued the new license on November 18, 2003, designating a license term of 35 years.

Under the provisions of the Settlement Agreement, the license is not final until all administrative and judicial appeals are exhausted. The license was appealed to the Ninth U.S. Circuit Court of Appeals on May 21, 2004. On September 1, 2005, the Court ruled the case in favor of FERC, USDA-FS, and PacifiCorp. The license was considered final on October 18, 2005.

Copies of the Settlement Agreement and the FERC license are available from FERC upon request or on the PacifiCorp Web site at: https://www.pacificorp.com/energy/hydro/north-umpqua-river.html.

1.2 Resource Coordination Committee

SA Section 21 establishes a process to facilitate coordination and decision-making concerning implementation of Settlement Agreement measures. To accomplish this objective, SA Section 21.1 provides for the creation of the Resource Coordination Committee (RCC) consisting of representatives from the signing Parties. The purposes of the RCC, discussed in detail in SA Section 2.0, are to 1) facilitate coordination and consultation on plans developed by PacifiCorp for the implementation of protection, mitigation, and enhancement measures (PM&E Measures); 2) coordinate the implementation of PM&E Measures and ongoing monitoring requirements by PacifiCorp; 3) establish appropriate procedures for conducting activities; and 4) establish subcommittees to accomplish these objectives.

1.3 Report Organization and Review

The 2019 North Umpqua Hydroelectric Project Annual Report provides information on RCC roles, responsibilities, members, and meetings; PM&E Measure implementation; FERC license actions; and fiduciary reporting.

2.0 RESOURCE COORDINATION COMMITTEE

This section provides an overview of RCC roles and responsibilities according to the Settlement Agreement and as subsequently implemented. It also presents a summary of RCC meetings held during the reporting period, including major discussion points, decisions, and action items associated with each meeting.

2.1 RCC Roles and Responsibilities

The purpose and role of the RCC, as defined in SA Section 21.1, is to facilitate coordination and implementation of PM&E Measures. The RCC also looks at implementation requirements, and through collaboration and sharing of information, works to achieve desired results. Specifically excluded from RCC responsibility and authority is the administration of SA Section 19.1 Tributary Enhancement Program and SA Section 19.3 Mitigation Fund, administered by ODFW and USDA-FS, respectively. However, responsible Parties may consult with the RCC concerning measures conducted pursuant to the program and fund.

The structure and process of the RCC is intended to provide a forum to address time-sensitive matters, give early warning of problems, and coordinate member organization actions, schedules, and decisions to save time and expense. As described in the Settlement Agreement, the RCC must endeavor to conduct its business by consensus. However, in the event of disagreements, the Parties may refer disagreements to appropriate policy-level decision-makers. Decisions of the RCC may not usurp the authority of individual Parties or specific governmental agencies identified in the Settlement Agreement as having approval authority regarding specific PM&E Measures.

The RCC is responsible for the following measures pursuant to the Settlement Agreement:

- coordinating implementation of the Resource Coordination Plan (RCP), including ongoing operations and maintenance (SA Section 21.1);
- coordinating implementation of PM&E Measures and ongoing monitoring requirements by PacifiCorp (SA Section 21.1);
- coordinating responses and evaluations specifically assigned to the RCC (SA Sections 8.2.2, 8.3.3, 12.2, 14.3.3, 14.5, 17.8, 19.2.1 and 22.5.2, and SA Amendment Section 7.2);
- coordinating and consulting on plans developed by PacifiCorp (SA Section 21.1);
- reviewing and commenting on the draft annual report of RCC activities and implementation of PM&E Measures (SA Section 21.4.2); and
- serving as a common point of contact for public information regarding Settlement Agreement implementation.

The following measures are specifically excluded from RCC responsibility:

- administration of the Tributary Enhancement Program through ODFW's Memorandum of Understanding (SA Section 19.1);
- administration of the Mitigation Fund through USDA-FS (SA Section 19.3); and
- approval of plans and actions regarding specific PM&E Measures assigned to individual organizations for resource protection (SA Section 21.2).

The RCC defined discrete goals and functional responsibilities to enhance its effectiveness, including the following:

- interpreting the Settlement Agreement through provisions to on-the-ground planning and implementation;
- monitoring implementation of the Settlement Agreement as a whole to provide a wider view than one agency's perspective;
- avoiding surprises and errors through effective communication;
- tracking progress as the interface for the Parties during implementation;
- identifying policy issues by working collectively to define and clarify the issues and options for transmittal to the executive members of the Parties;
- providing public information as a source of information regarding Settlement Agreement implementation with a collective voice;
- promoting efficiency through sharing of information among organizations; communicating changes in policy, procedure, or regulation; consulting before decision-making; and sharing technical resources;
- implementing the Settlement Agreement collaboratively to ensure that all Parties' interests continue to be valued throughout the new license term; and
- communicating its progress through the development of a website at: https://www.pacificorp.com/energy/hydro/north-umpqua-river.html.

2.2 RCC Members

The Parties have each appointed a member and an alternate to the RCC. The members are shown in Table 1. The RCC members work with a designated caucus within their respective organizations.

Table 1. 2019 Resource Coordination Committee Members

RCC Member	Organization
Pam Sichting	USDA Forest Service, Umpqua National Forest, Roseburg, Oregon
Jim Thrailkill	USDI Fish and Wildlife Service, Roseburg, Oregon
Michael Korn	USDI Bureau of Land Management - Roseburg District, Roseburg, Oregon
Jim B. Muck	NOAA Fisheries West Coast Region, Roseburg, Oregon
Jason Brandt	Oregon Department of Fish and Wildlife, Roseburg, Oregon
Chris Stine	Oregon Department of Environmental Quality, Eugene, Oregon
Craig Kohanek	Oregon Water Resources Department, Salem, Oregon
Steve Albertelli	PacifiCorp, Medford, Oregon

2.3 RCC Meetings

During the reporting period, the RCC conducted four meetings to review work plans, discuss implementation objectives for current and future PM&E Measures, and facilitate the overall Settlement Agreement implementation. The formal ground rules established and adopted by the RCC provide the functional framework for this collaborative approach. These ground rules are provided on the PacifiCorp website at:
https://www.pacificorp.com/energy/hydro/north-umpqua-river.html

Meeting summaries are drafted and distributed to the RCC members for review and comment. After corrections have been made as appropriate, the RCC approves the summaries by consensus. Meetings are open to the public for comment, and any comments received are added to the meeting summaries.

This section provides highlights of items discussed at RCC meetings during the reporting period. Detailed meeting summaries are provided on the PacifiCorp website at: https://www.pacificorp.com/energy/hydro/north-umpqua-river.html.

- The RCC approved the following expenditures, funding proposals, and other requests with regards to the SA 7.2 Gravel Augmentation Program.

    - CY2019 budget amount of $30,000 for gravel augmentation.

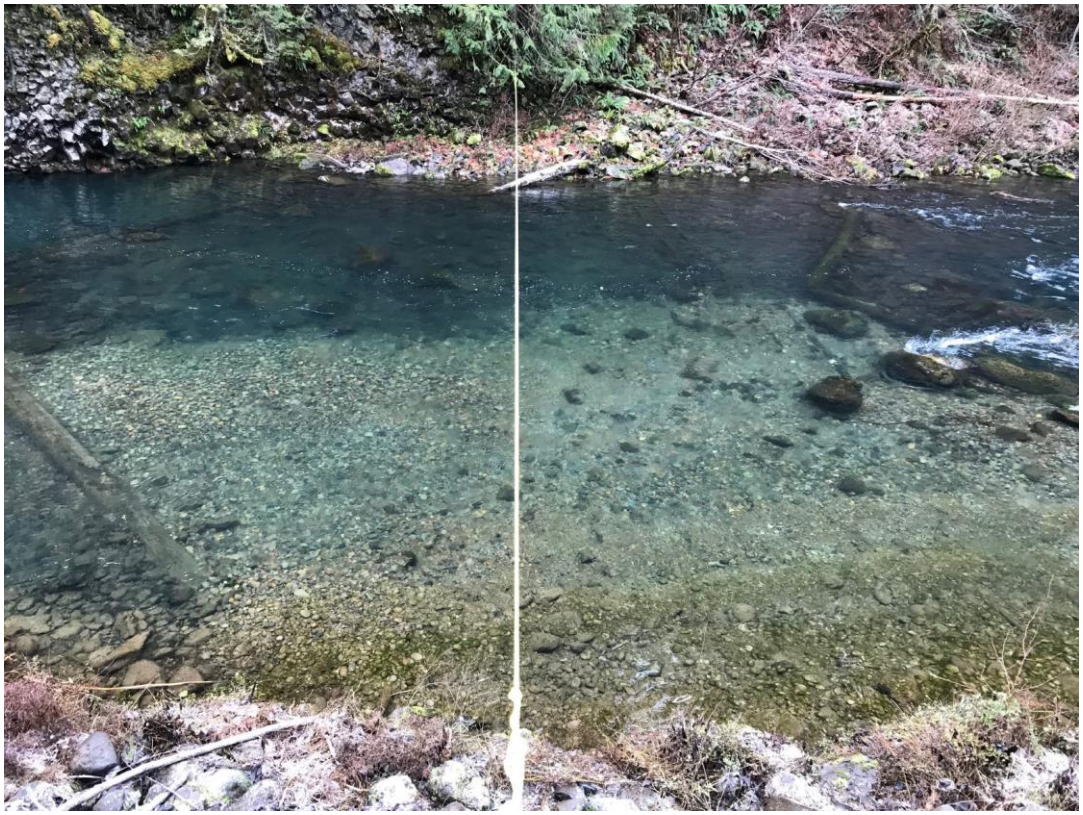

Figure 1. Freshly added spawning gravel in Soda Springs Bypass Reach.

- The RCC approved the following expenditures, funding proposals, and other requests with regards to the SA 19.2 Long Term Monitoring/Predator Control Program:

    - CY2019 budget amount of $168,196 (includes $140,696 to ODFW for EBA and NRS staffing).

    - $1,400 for Stillwater Sciences to provide statistical support on monitoring and predator control.

    - $9,000 for Weekly Bros. to provide Soda Springs smolt trap recovery services.

    - Proposed CY2020 budget amount of $116,000.

- The annual public tour was held on October 4, 2019.

3.0 PROTECTION, MITIGATION, AND ENHANCEMENT MEASURES

This section presents a progress report of PM&E Measures defined in the North Umpqua Settlement Agreement and FERC License implemented during calendar year 2019. A summary and status report of all License and Settlement Agreement related documents submitted to FERC is also presented.

3.1 Implementation of PM&E Measures

The implementation schedule for remaining PM&E Measures is presented in Table 2. PM&E measures that are not ongoing and/or were completed in prior years have been removed from the table. The current status of the PM&E Measures is presented in Table 3.

During 2019, Settlement Agreement and license actions focused on implementing management and monitoring plans and operating and maintaining existing PM&E Measures. All Parties have worked cooperatively toward meeting Settlement Agreement schedule commitments.

Table 2. PM&E Measures Implementation Schedule

Key	
	Due Date
●	Complete

SA Section	PM&E	YEAR											
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023 +
6.0 RAMPING													
6.2.1	Slide Creek Ramping Monitoring Plan Implementation		●	●	●	●	●	●	●				
6.4	Wild & Scenic Ramping Restrictions	●	●	●	●	●	●	●	●				
6.5	Bypass Reach Ramping Restrictions	●	●	●	●	●	●	●	●				
6.6	Project Maintenance - Appendix D Schedule	●	●	●	●	●	●	●	●				
6.7	Emergency Shutdown Ramp Restrictions	●	●	●	●	●	●	●	●				
7.0 RESTORATION OF FLUVIAL PROCESSES													
7.2	Gravel Augmentation Program	●	●	●	●	●	●	●	●				
7.3	Passage of Woody Debris	●	●	●	●	●	●	●	●				
7.4	Passage of Sediment (if high flows present)	●	●	●	●	●	●	●	●				
8.0 MAINSTEM HABITAT ENHANCEMENT													
8.3.5	Soda Springs Funding and Accounting	●	●	●	●	●	●	●	●				
9.0 RESERVOIR AND FOREBAY MANAGEMENT													
9.1	Stocking of Rainbow Trout Funding	●	●	●	●	●	●	●	●				
9.3	Management of Lemolo Lake Reservoir	●	●	●	●	●	●	●	●				
9.5	Fish Salvage during Shutdowns	●	●	●	●	●	●	●	●				
12.0 VEGETATION MANAGEMENT													
12.1	Vegetation Management Plan Development and Implementation	●	●	●	●	●	●	●	●				
12.2	Noxious Weed Control	●	●	●	●	●	●	●	●				
13.0 AVIAN PROTECTION													
13.4	Records & Database Management System	●	●	●	●	●	●	●	●				
14.0 EROSION & SEDIMENT CONTROL													
14.5	Erosion Monitoring	●	●	●	●	●	●	●	●				
15.0 TRANSPORTATION													
15.1	Transportation Management Plan Implementation	●	●	●	●	●	●	●	●				
15.2	PPL Roads to USDA-FS Standards	●	●	●	●	●	●	●	●				
15.3	Cost Sharing for Joint Roads and Maintenance	●	●	●	●	●	●	●	●				
15.5	Bridges - Inspections/Maintenance	●	●	●	●	●	●	●	●				
15.5.1	Bridge Maintenance Cost Sharing	●	●	●	●	●	●	●	●				
15.6	Culvert Maintenance - PPL Use Roads	●	●	●	●	●	●	●	●				

Key	
	Due Date
●	Complete

SA Section	PM&E	YEAR											
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023 +
16.0 AESTHETICS													
16.1	Aesthetics Management Plan Implementation	●	●	●	●	●	●	●	●				
17.0 RECREATION													
17.2	Recreation O&M Funding	●	●	●	●	●	●	●	●				
17.7	Law Enforcement Funding	●	●	●	●	●	●	●	●				
17.8	Recreation - Capital Improvements	●	●	●	●	●	●	●	●				
17.9	Public Information Funding	●	●	●	●	●	●	●	●				
17.10	Annual Monitoring Funding	●	●	●	●	●	●	●	●				
18.0 CULTURAL													
18.1	Historic Properties Management Plan Implementation	●	●	●	●	●	●	●	●				
18.3/18.6	Site Discovery/Monitoring	●	●	●	●	●	●	●	●				
18.4	Protection, Restoration, and Recovery	●	●	●	●	●	●	●	●				
19.0 MITIGATION													
19.1.1	Tributary Enhancement Account - Use of Funds	●	●	●	●	●	●	●	●				
19.2	Long-Term Monitoring/Predator Control Funding	●	●	●	●	●	●	●	●				
19.2.1	Long-Term Monitoring/Predator Control Disbursements	●	●	●	●	●	●	●	●				
19.3.3	Federal Mitigation Funding	●	●	●	●	●	●	●	●				
19.4.1	Monitoring and Oversight	●	●	●	●	●	●	●	●				
21.0 COORDINATION & DECISION-MAKING													
21.1	Resource Coordination Committee	●	●	●	●	●	●	●	●				
21.1	Resource Coordination Plan - Developed and Implemented	●	●	●	●	●	●	●	●				
21.4.2	Annual Report	●	●	●	●	●	●	●	●				
21.5	Site Specific Plan Development	●	●	●	●	●	●	●	●				

Table 3. PM&E Measures Status

SA Section	PM&E Measure	Due Date	Current Status
4.1	Fish Passage at Soda Springs Dam Operations and Maintenance	2012-2038	The fish passage facilities were operated as designed and intended. The annual O&M report was reviewed by the agencies and filed with FERC. Fish passage continued to be monitored and reported annually as part of the SA 19.2 Long-term Monitoring Program and the associated annual report.
5.1	Instream Flow Increases in Project Bypass Reaches	2005-2038	License-required minimum flows continued to be provided and managed within required ramp rate allowances to the greatest extent possible.
5.5	Instream Flow Monitoring	2002-2038	Monitoring and reporting continued as required in the Flow Monitoring Plan, with the USGS contracted to manage the stream gages and related data. Water year reports were produced and provided based on the provision of publication-grade data from the USGS to PacifiCorp.
6.2.1	Slide Creek Ramping Monitoring Plan Implementation	2013-2020	A monitoring plan was developed and is ready for implementation when conditions warrant. Study conditions (e.g., aggressive load following and ramping operations) did not occur this year, so field study was not implemented.
6.4	Wild and Scenic Ramping Restrictions	2001-2038	Ramping restrictions and reporting requirements were followed per the Flow Monitoring Plan.
6.5-6.6	Bypass Reach Ramping Restrictions	2001-2038	Ramping restrictions and reporting requirements were followed per the Flow Monitoring Plan.
7.2 (and SA Amendment No. 1)	Gravel Augmentation Program	2002-2038	Monitoring and maintenance of augmentation sites continued per the Gravel Augmentation Plan, with reports provided on 5-year intervals.
7.3	Passage of Woody Debris at Soda Springs and Slide Creek Dams	2002-2038	Passage of woody debris continued according to the Plan. Two large logs were removed from Soda Springs reservoir and returned to the river downstream of the powerhouse.
8.2.1-8.2.2	Slide Creek Bypass Reach Habitat Project Implementation/ Monitoring	2002-2038	Monitoring continued according to the Plan, with reports provided on 5-year intervals.

SA Section	PM&E Measure	Due Date	Current Status
8.3.2-8.3.3	North Umpqua River Habitat Restoration/ Creation Implementation/ Monitoring	2004-2038	Annual monitoring occurred according to the Plan, with an annual report submitted to the RCC. Maintenance was permitted and planned for implementation in 2020.
9.1	Funding for Production of Rainbow Trout for Stocking	2004-2038	PacifiCorp provided $21,200 to ODFW in 2019 for the production of trout.
9.3	Lemolo Reservoir Management Plan and Limits on Drawdown Rate and Elevations	2001-2038	Reservoir management and consultation occurred according to the Lemolo Reservoir Management Plan. Water levels and drawdown rates were managed and monitored according to the Flow Monitoring Plan.
9.5	Salvage of Fish During Maintenance Shutdowns	2001-2038	Advance notice of planned maintenance shutdowns was made to the appropriate agencies, and the salvage and liberation of fish was permitted and implemented as required.
11.5	Wetland Enhancement	2006-2016	A total of eight wetland enhancement sites were constructed between 2006 and 2016. Three of the wetland enhancement sites continue to be monitored for a period of five years post-construction and maintained for self-sustaining, native wetland plant communities.
12.1	Vegetation Management Plan Implementation	2004-2038	The Vegetation Management Plan (VMP) continues to undergo implementation. Noxious weed treatments were conducted on USDA-FS lands in 2019. Noxious weed training occurred per the Plan, and implementation of the horticultural invasive species program continued as necessary to satisfy VMP requirements. The 5-year rolling action plan (RAP) was developed and presented to both the USDA-FS and BLM in December 2019.
13.1	Power Pole Modification	2001-2038	No transmission structures were replaced on transmission lines within the FERC boundary in 2019.
13.4	Records Database Management System	2001-2038	The database for management of birds on power lines was maintained. An annual report summarizing avian-power line interactions occurring within the Project area was submitted to the USDA-FS in January.
14.2	Canal Shutoff and Drainage Systems (CSDS) Operation and Maintenance	2007-2038	The CSDS on the Clearwater 2, Fish Creek, and Lemolo 2 waterways continue to be operated and maintained consistent with SA requirements.

SA Section	PM&E Measure	Due Date	Current Status
14.5	Erosion Control Monitoring	2001-2038	Erosion sites were monitored, and an annual report was produced and distributed to the agencies in October.
15.1–15.4	Transportation Management Plan Implementation Cost Sharing	2004-2038 2007-2038	The Transportation Management Plan continues to undergo implementation. The 5-year RAP was developed in consultation with the USDA-FS and the BLM. The total cost of road maintenance on roads jointly-maintained by USDA-FS and PacifiCorp in 2019 was $51,425, of which PacifiCorp's share was $14,102.
15.5, 15.5.1	Bridge Inspections, Maintenance Cost Sharing	Annual & Biennial Inspections 2005-2038	Cost-sharing continued or commenced for bridges on jointly-maintained hydro roads following completion of non-critical, deferred maintenance. Fracture critical bridges are inspected annually as part of the annual inspection program. Biennial bridge inspection was completed in 2019 for 34 bridges.
16.1, 16.3, 16.4	Visual Resources (Aesthetics) Management Plan	2005-2038	The Aesthetics Management Plan continued to undergo implementation. The 5-year RAP was developed in December.
17.1	Recreation Resources Management Plan Implementation	2004-2038	The Recreation Resources Management Plan continued to undergo implementation. The 5-year RAP was developed and updated in consultation with the USDA-FS. Identified actions were completed.
17.2	Campground Operations and Maintenance	2004-2038	PacifiCorp provided $101,695 to the USDA-FS in 2019 for campground operations and maintenance.
17.7	Law Enforcement	2004-2038	PacifiCorp provided $11,307 to the USDA-FS in 2019 for law enforcement service.
17.8	Capital Improvements	2002-2015; future years' funding will be monitoring-dependent	No funding was provided to the USDA-FS in 2019 for capital improvements to recreation facilities.
17.9	Public Information	2004-2038	PacifiCorp provided $9,328 to the USDA-FS in 2019 for public information projects.
17.10	Recreation Monitoring Recreation Monitoring (Periodic Surveys)	2004-2038 2007, 2012, 2017, 2022, 2027, and 2032	PacifiCorp provided $9,328 to the USDA-FS in 2019 for routine recreation monitoring.

SA Section	PM&E Measure	Due Date	Current Status
18.1	Cultural Resources (Historic Properties) Management Plan Implementation	2006-2038	The Historic Properties Management Plan and Historic Structures Plan continue to undergo implementation. The 5-year RAP was updated in consultation with the USDA-FS, the BLM, and the SHPO.
18.6	Cultural Resources Monitoring	2001-2038	PacifiCorp coordinated ground-disturbing activities with the USDA-FS, the BLM, and the SHPO to assure ongoing monitoring and protection of historic properties.
19.1	Tributary Enhancement Program	2004-2038	Per the ODFW Memorandum of Understanding, work continued on fish habitat enhancements and fish passage improvements.
19.2	Long-Term Monitoring and Predator Control	2004-2038	PacifiCorp deposited $141,336.24 into the designated fund in 2019. The RCC continued to manage expenses from this fund. Long-term monitoring and predator control study work proceeded according to the Long-Term Monitoring and Predator Control Study Plan, refined as necessary by the Technical Working Group (TWG).
19.3	Mitigation Fund	2004-2038	PacifiCorp deposited $353,340.61 into the USDA-FS-administered mitigation fund account in 2019. A USDA-FS Mitigation Fund Board of Directors (BOD) annually evaluates proposals and selects mitigation projects to be implemented with this funding. Project rankings are completed by the USDA-FS hydropower project review group, and final recommendations are made by the BOD. The Forest Supervisor of the Umpqua National Forest makes the final decision on project selections.
19.4	Oversight Costs	2005-2020	PacifiCorp provided $228,964.72 in 2019 to ODFW for the funding of ODFW personnel to monitor the 19.1 program and oversee on-site PM&Es.
21.4.1	RCC	2001-2038	The RCC continued to facilitate the implementation of PM&Es. It held an annual planning session, a public tour, and quarterly meetings. TWGs continued to convene, when necessary, to address detailed consultation issues.

3.1.1 Noteworthy Accomplishments

During the reporting period, PacifiCorp continued implementing PM&E Measures in compliance with the Settlement Agreement. Noteworthy accomplishments are described below by Settlement Agreement section.

Tributary Enhancement Program (SA Section 19.1)

Implementation of habitat enhancements and other program work by ODFW hydropower staff continued in 2019 and included:

- *Harrington Creek Post-restoration Monitoring* – ODFW hydropower staff monitoring of the restoration reach shows enhancement structures continue to exceed performance goals and provide biological habitat for all life stages for all species that use Harrington Creek. Analysis of the Harrington Creek Effectiveness Monitoring Project indicates the enhancement reach has tripled the summer juvenile Coho Salmon population and increased juvenile Coho Salmon overwintering success from 2 percent pre-restoration to 33 percent post-restoration. Based on the water quality station placed in lower Harrington Creek, the addition of available gravel in the reach continues to keep the water temperatures in the low 60s.

- *Rock Creek Mainstem and Tributaries Enhancement* – ODFW completed challenging restoration efforts on lower mainstem Rock Creek from mile marker 2.25 to 4.0, representing the farthest downstream reach on private land on which ODFW hydropower staff are able to work. ODFW hydropower staff designed and enhanced a reach of Rock Creek with active channel widths between 80 and 100 feet. This enhancement required very large and long materials. The logistics for getting these large materials to stream staging areas proved to be problematic. Agreements with three private non-industrial landowners enabled ODFW hydropower staff and contractors to upgrade old logging roads and build new ones, as access corridor distances were up to one-quarter mile from paved mainline roads to the stream enhancement locations. These access roads and corridors took nearly a month and a half to construct. Very large equipment was used to load and offload the 50-foot long by 36- to 48-inch diameter logs (see Figure 2). The "Hay Rack" logging truck was barely able to make it down the winding, narrow access roads. Within the 1.75 mile restoration reach, 27 sites were constructed using 500 4- to 5-foot boulders, 125 large logs and 75 logs with attached root wads, and manipulating channel edges to slow velocity and promote sinuosity (see Figures 3 and 4). In this wide reach with significant flow volumes, ballasted material (see Figure 5) was needed to slow and divert water velocity, mitigate channel incision, and promote sinuosity and gravel deposition to form new point bars and additional spawning areas. The point bars will add substrate for willows to grow in and provide needed areas for shade trees to prosper, thus helping to cool the water temperatures in the lower reaches of the stream. The ballasted log jams are designed to form deeper, cooler scour pools while providing rearing refuge areas for juvenile salmonids (see Figures 6 and 7).

Figure 2. Loading very large material with very large equipment.

Figure 3. Large boulders and logs slow velocity and promote sinuosity (View 1).

Figure 4. Large boulders and logs slow velocity and promote sinuosity (View 2).

Figure 5. Ballasted material forms new point bars with additional spawning areas.

Figure 6. Ballasted log jams provide rearing refuge areas for juvenile salmonids (View 1).

Figure 7. Ballasted log jams provide rearing refuge areas for juvenile salmonids (View 2).

Spawning Surveys in Rock Creek, East Fork Rock Creek, and Harrington Creek – Adult spring Chinook Salmon, Coho Salmon, winter and summer steelhead, and adult Pacific Lamprey spawning surveys continued in most of the previously-enhanced and long-term index reaches. In Rock Creek, spring Chinook surveys yielded a peak count of 26 redds. A total of 103 redds were counted during Coho Salmon surveys in mainstem Rock Creek which was the highest count in the past 5 years (2018=39 redds; 2017=33 redds; 2016=25 redds; 2015=17 redds). ODFW did not complete winter steelhead surveys due to an ODFW hydropower staff knee injury.

East Fork Rock Creek surveys yielded a peak count of 70 Coho Salmon redds in 2019, compared to 40 redds in 2018, 28 redds in 2017, and 36 redds in 2016.

Harrington Creek Coho surveys provided a peak count of 21 redds with only 2 carcasses observed.

- *Adult Salmonid Snorkel Surveys in Rock Creek Mainstem* – Snorkel surveys for holding adult salmonids continued in September 2019 despite very low water conditions. Total spring Chinook Salmon counts were 49 adults below the diversion dam and 22 above the dam. As in years past, hatchery fish outnumbered wild fish in the counts with 81 percent of spring Chinook Salmon observed being of hatchery origin. In addition, only 22 summer steelhead were counted, with 60 percent of those fish being of hatchery origin.

- *Monitoring* – ODFW continues to partner with local watershed councils (e.g., South Umpqua Rural Community Partnership and Partnership for Umpqua Rivers) to supplement mitigation dollars to provide continued enhancement of tributaries in the basin well into the future.

  ODFW's hydropower program water quality stations continue to operate. ODFW anticipates that winter hydrographs will show that flow peaks associated with large freshets are dampened as the rise and fall of stream height is slowed by the addition of mainstem, reconnected side channels and floodplains. Several years of pre-restoration flow data will have to be used to compare with post-restoration flows to evaluate potential flow benefits from restoration projects. With the continued help of BLM's hydrologist, water quality station problems are becoming easier for the fish biologist to diagnose. Four of the seven water quality stations in the basin have either been replaced or upgraded.

  ODFW hydropower staff continue to debate the use of drones as a means of monitoring restoration projects in the Rock Creek basin, with the main issue being that no baseline data was generated pre-restoration for appropriate comparisons. However, new drones equipped with forward-looking infrared (FLIR) cameras that are able show water temperature variations could provide valuable data to demonstrate the effectiveness of efforts being made to cool stream temperatures through restoration activities. BLM engineers have offered to explore the idea of flying FLIR-equipped drones over private stream reaches when they are flying BLM reaches. In addition, ODFW hydropower staff have met with the BLM official in charge of minerals and have been told about an inter-agency memorandum of understanding that allows ODFW to acquire boulders from

BLM rock pits. Some of the local Rock Creek pits are in line to be re-opened, and this would help offset additional boulder costs. Lastly, a meeting with the BLM recreation supervisor is being planned to discuss the replacement of old signs at the beginning of the Rock Creek watershed with new signs that highlight the restoration work that has been done in the watershed.

In keeping with ODFW hydropower staff's continued efforts to reduce costs, a cooperative landowner (Forest Investment Associates) who has been an excellent partner in ODFW's restoration efforts, is once again working with ODFW hydropower staff to provide approximately 200 large boulders that can be collected from a recent harvest area. Starting in March 2020, trees from a local ranch will be dug up and pushed over to keep the invaluable root wads intact. Designs are being developed for several of the older restoration sites within the basin to be augmented or adjusted in 2020. The previously utilized, large, paved log storage facility was sold, and ODFW had to move all remaining logs. A local timber company with land in the Rock Creek basin agreed to let ODFW hydropower staff store the logs on their property in exchange for some small upgrades to pads and access roads. Additional cull logs left at several sites around the basin have been given to ODFW hydropower staff for free and have been added to the stockpile for the 2020 instream season.

Long-Term Monitoring and Predator Control Study Program (SA Section 19.2)

Long-term monitoring of fish movement and populations affected by Soda Springs fish passage is currently in the "interim period" and continues with a limited scope per the Study Plan. Efforts this year concentrated on routine monitoring of fish use of the fish passage facilities, with a secondary focus on redd surveys. Upstream passage of adult salmonids was monitored daily via the video system at the Soda Springs fish ladder, where an annual average of about 1,200 adult salmon and steelhead have been passing upstream of the dam. Downstream passage of juvenile fish through the fish screen was monitored at the Soda Springs Fish Evaluation Building one to three nights per week, with catches much lower in 2019 than in 2018, presumably owing to different weather and flow conditions. Redd surveys help describe the distribution of fish and the relative use of the available spawning habitats, which changed substantially in 2019 compared to previous years. The predator control study reached a landmark with the publication of a final report summarizing fifteen years of intermittently intensive study and concluding that the brown trout population in Soda Springs Reservoir is capable of substantial predation on juvenile native salmonids and may limit the success of fish passage investments. Consequently, an initial predator control effort is being planned to start in 2020 with a target of removing at least 200 predators.

Figure 8. Three Coho Salmon passing Soda Springs Dam together.

Figure 9. Smolt trap in action sampling fish that pass through the Soda Springs spillway.

Figure 10. Chinook (top) and Coho Salmon parr sampled as they migrate downstream through Soda Springs fish screen.

Figure 11. Educating the next generation about fish migrations at the Soda Springs Fish Evaluation Building.

Figure 12. Beautiful wild steelhead smolt sampled from Soda Springs fish screen on its way to the ocean.

Figure 13. Using catarafts to survey Chinook Salmon redds on the mainstem North Umpqua River.

3.1.2 Plans and Reports

The following plans and reports were completed and/or revised during 2019:

Table 4. Plans and Reports Status

Plan/Report	SA Section, License Article, or FERC Order	Month Completed
Soda Springs Spawning Habitat Annual Report	SA 8.3	January
Lemolo Reservoir Management Annual Report	SA 9.0	January
Soda Springs Fish Passage Operation and Maintenance Annual Report	SA 4.1.1	January
Annual Avian Protection Report	SA 13.4	January
Annual Threatened and Endangered Species and Bald Eagle Monitoring Report	License Articles 411 & 412	March
Resource Coordination Committee Annual Report	SA 21.4.2	June
Long-term Monitoring and Predator Control Study Annual Report	SA 19.2	June
SA 19.2 Predator Control Program, Soda Springs Reservoir Predation Studies Final Report	SA 19.2	June
Erosion Control Plan Annual Report	SA 14.5	October
Historic Properties Annual Report	License Article 414	December
Flow Monitoring Plan Annual Report - Water Year 2017	SA 5.5, 6.6	June
Soda Springs Water Quality Annual Report	401 WQ Certification	May

3.2 FERC License Actions

The FERC license contains actions that are required in addition to those actions in the Settlement Agreement. Table 5 summarizes the FERC License requirements that were fulfilled during this reporting period.

Table 5. FERC License Actions Status

Date Filed	License Article(s)	Settlement Agreement Section(s)	Description	Status/ Comments
1/30/19	401	4.1	2018 Soda Springs Fish Passage Facility Operations and Maintenance Annual Report	Acknowledged 1/30/19
3/11/19	411 & 412	USDA-FS 4(e) Condition 16	2018 Threatened and Endangered Species and Bald Eagle Monitoring Report	Acknowledged 3/11/19
6/14/19	401	21.4.2	2018 Resource Coordination Committee Annual Report	Acknowledged 6/14/19
12/18/19	414	18.1 & 18.2	2019 Historic Properties Annual Report/Action Plan	Acknowledged 12/18/19

4.0 FIDUCIARY REPORTING

Consistent with Settlement Agreement fiduciary reporting requirements, this section provides account information for the following actions and fulfills the requirement to annually report the amounts deposited into and disbursed from each of the following accounts:

- SA Section 7.2.3 (amended) Gravel Augmentation Program;
- SA Section 8.3.5 (amended) North Umpqua River Habitat Restoration/Creation Project;
- SA Section 19.1.1.3 Tributary Enhancement Program; and
- SA Section 19.3.1 Mitigation Fund.

The Settlement Agreement does not require annual reporting for SA Section 19.2 Long-Term Monitoring and Predator Control Fund. Since this was likely an oversight, the account information for this fund is also provided in this section.

Fiduciary Reporting

Table 6. SA 7.2 Gravel Augmentation Program

Date	Item	Expenditures	Funding	Balance
2019	**Opening Balance**			**$37,826.80**
2019	Annual Escalation (per SA 22.4.4)		$903.53	$38,730.33
2019	Expenditures			
	PacifiCorp			
	Staff labor, permits, and expenses	($6,345.32)		
	Weekly Bros.			
	900 cy fish gravel	($22,160.00)		
	Total Expenditures	**($28,505.32)**		$10,225.01
2019	**Ending Balance**			**$10,225.01**

Fiduciary Reporting

Table 7. SA 8.3 North Umpqua River Habitat Restoration/Creation Project

Date	Item	Expenditures	Funding	Balance
2019	**Opening Balance**			**$26,411.12**
2019	Annual Escalation (per SA 22.4.4)		$630.85	$27,041.97
2019	Expenditures			
	PacifiCorp			
	Staff labor, permits, and expenses	($4,995.50)		
	Total Expenditures	**($4,995.50)**		$22,046.47
2019	**Ending Balance**			**$22,046.47**

Fiduciary Reporting

Table 8. SA 19.1 Tributary Enhancement Program Fund

Date	Item	Expenditures	Funding	Balance
2019	**Opening Balance**			**$1,046,928.52**
2019	Expenditures			
	Mark Jones Trucking			
	Fish log loading and hauling	($10,762.50)		
	Kevin Saylor			
	Log, bark, boulder, and root wad staging, loading, hauling and placement; site construction; gate installation; road work; seeding/mulching; and equipment rental	($158,881.00)		
	Bruce Standley Construction			
	Log and root wad hauling	($4,762.50)		
	Total Expenditures	**($174,406.00)**		$872,522.52
2019	Investment Earnings		$19,648.41	$892,170.93
2019	**Ending Balance**			**$892,170.93**

Fiduciary Reporting

Table 9. SA 19.2 Long Term Monitoring/Predator Control Fund

Date	Item	Expenditures	Funding	Balance
2019	**Opening Balance**			**$101,851.24**
2019	Annual Funding ($100K escalated)		$141,336.24	$243,187.48
2019	Expenditures			
	ODFW			
	Experimental Biological Aides (EBAs)	($140,696.00)		
	PacifiCorp			
	PacifiCorp staff labor and expenses	($13,129.52)		
	Stillwater Sciences			
	Soda Springs Predator Control Study	($65,611.00		
	Weekly Bros.			
	Smolt trap debris removal/salvage	($9,000.00)		
	Total Expenditures	**($228,436.52)**		$14,750.96
2019	Investment Earnings		$3,662.70	$18,413.66
2019	**Ending Balance**			**$18,413.66**

Fiduciary Reporting

Table 10. SA 19.3 Mitigation Fund

Date	Item	Expenditures	Funding	Balance
2019	**Opening Balance**			**$2,850,106.58**
2019	Annual Funding ($250,000 escalated)		$353,340.61	$3,203,447.19
2019	Expenditures			
	Mitigation Projects			
	Internal			
	Shrub Understory Mechanical Regeneration - NEPA			
	Partnered Owl Survey			
	Late Seral Habitat Wildfire Protection Strategy			
	Mowich Ponds (Wetland Enhancement)			
	Fish Watch 2019 ($15k for 3 years, annually)			
	USGS Cooperative Stream Gages			
	Middle Steamboat Restoration Survey and Design			
	GRAIP Phase II of III - Steamboat Creek			
	Harmful Algae Bloom Surveillance and Water Quality Monitoring of LM and Diamond Lake			
	Stream Temperature Monitoring			
	Aquatic Invasive Species (AIS) Education & Prevention			
	Gravel Augmentation at Soda Springs			
	NUT Trail Bridges			
	Partners			
	Rock Creek Mainstem Restoration - Phase 1			
	Canton Creek Instream Restoration			
	False Brome Treatments along NUR on BLM Lands ($40k/year for 2 years)			
	Partners Improving Wildlife			
	Lamprey Habitat Monitoring			
	Macros Bio-Monitoring ($15k for 3 years, annually)			
	Upper Steamboat Snorkel Surveys ($9,210/year for 3 years)			
	Total Expenditures	**($870,384.00)**		$2,333,063.19
2019	Interest Earned		$7,140.12	$2,340,203.31
2019	**Ending Balance**			**$2,340,203.31**

5.0 CONCLUSION

The full suite of date-certain PM&E Measures are in place on the Project and will continue to be operated and maintained throughout the License term for the benefit of natural resources in the Project area and beyond. Of particular note is the on-going, successful operation and maintenance of the Soda Springs fish passage facilities. Hundreds of steelhead and salmon were observed using the fish ladder during the year.

Other major accomplishments during the reporting period included implementation of the long-term monitoring and predator control study plan and completion of annual Rolling Action Plans for ongoing programs to manage vegetation, erosion, transportation, aesthetics, recreation, and cultural resources in the North Umpqua Project area.

As in years past, a productive year of Project License and Settlement Agreement implementation was made possible through the dedication of the Parties and their respective staff in coordination with PacifiCorp's implementation team and operations and maintenance staff. The RCC ground rules and protocols for interagency teamwork and communication have provided an effective framework for watershed management consistent with the goals of the Settlement Agreement. Parties worked cooperatively toward meeting Settlement Agreement commitments during the report period and projects were completed on schedule.

In 2020, emphasis will be placed on the continued successful operation, evaluation, and maintenance of PM&E Measures, including the Soda Springs fish passage facilities, pursuant to the intent of the Settlement Agreement. As in past years, long-term monitoring and off-site mitigation will continue in the North Umpqua basin as part of the implementation program to protect, mitigate, and enhance natural resources in this highly valued watershed.