# Lewis River Hydroelectric Projects

*FERC Project Nos. 935, 2071, 2111, 2213*

# 2023 Annual Report

*Lewis River Aquatic Fund Projects*

June 2023

## Introduction

This 2023 Annual Report prepared by PacifiCorp and the Public Utility District No. 1 of Cowlitz County, Washington ("Cowlitz PUD") (collectively the "Utilities") is provided to the Lewis River Settlement Agreement Parties to fulfill the reporting requirement in Article 7.5.3.2 (5) of the Lewis River Settlement Agreement (SA). This report identifies the actions and selection of Aquatic Resource Projects (Resource Projects) to be funded from the Lewis River Aquatic Fund established under terms of the SA (Article 7.5, see **Appendix A**). Although the funding process was managed by the Utilities, the Aquatic Coordination Committee (ACC) provided final approval of funded projects. This report includes only Resource Projects selected from the 2022/2023 funding process, additional projects are expected to be selected and funded annually following the process established by the ACC.

This 2023 report is available to the Public on PacifiCorp's website at:
https://www.pacificorp.com/energy/hydro/lewis-river/aquatic-fund-applications.html

## Background

PacifiCorp owns the Merwin, Yale, and Swift No. 1 hydroelectric projects on the Lewis River in southwest Washington. Cowlitz PUD owns the Swift No. 2 hydroelectric project, also located on the Lewis River. These projects are operated as a coordinated system by PacifiCorp. On November 30, 2004, the Lewis River Settlement Agreement established the Lewis River Aquatics Fund (Fund). The purpose of the Fund is to support resource protection measures through funding aquatic related projects in the Lewis River basin.

As identified in the SA:

> "*Resource Projects may include, without limitation, projects that enhance and improve wetlands, riparian, and riverine habitats; projects that enhance and improve riparian and aquatic species connectivity that may be affected by the continued operation of the hydroelectric projects; and projects that increase the probability for a successful reintroduction program upstream of Merwin Dam. Species that are targeted to benefit from Resource Projects include Chinook, steelhead, coho, bull trout, chum, and sea-run cutthroat."*

Under the direction of the SA, the Utilities in Consultation with the ACC developed the "Aquatics Fund -- Strategic Plan and Administrative Procedures" (September 2005 – Revised January 2009, September 2013, August 2016 and August 2017). This strategic plan provides: (a) a guide to Resource Project development, solicitation, and review; and (b) provides administrative procedures to guide implementation of the Aquatics Fund.

The strategic plan is available to the Public on PacifiCorp's website at:
https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/energy/hydro/lewis-river/license-implementation/acc/08252017_LR_FINAL_Rev_AQ_Process_Doc.pdf

On August 9, 2022, PacifiCorp announced the availability of calendar year (CY) 2022/2023 funds for aquatic related projects in the Lewis River Basin (letter to interested parties from T. Olson, PacifiCorp, see **Appendix B**). The letter requested that individuals or parties interested in obtaining project funding submit a Full Proposal to PacifiCorp. Full Proposals were due by October 22, 2022.

All application materials and process timeline were provided electronically via the Lewis River Aquatic Fund website at the following link: https://www.pacificorp.com/energy/hydro/lewis-river/aquatic-fund-applications.html

## *2022/2023 Aquatic Fund Schedule*

| Activity | Target Milestone Date |
|---|---|
| Request for proposals distributed along with landowner acknowledgement form (Announcement Letter) | Jul 15, 2022 |
| Draft proposals due to ACC | Oct 21, 2022 |
| Conduct Proposed Project Information Meeting (applicant presentations) | Nov 10, 2022 |
| ACC members submit written request for clarification of project information if questions not answered during presentation meeting | Dec 02, 2022 |
| Final proposals due | Dec 30, 2022 |
| Full proposals and Evaluation template submitted to ACC for 30-day review and scoring | Jan 05, 2023 |
| Scoring template due to Utilities | Feb 02, 2023 |
| Distribute combined scores to ACC | Feb 03, 2023 |
| Conduct Project Selection Meeting* | Feb 09, 2023 |
| Provide additional 7-day review period for absentee ACC participants | Feb 10, 2023 |
| Submit project selection report to the FERC | Apr 15, 2023 |

* *Project authors are not permitted to attend this meeting*

In response to the announcement letter, two entities provided the following two (2) project Full Proposals.

| Applicant | Project Title |
|---|---|
| USDA Forest Service | Clear Creek and Clearwater Creek Restoration Implementation |
| Phil Roni, Cramer Fish Sciences | Pine Creek Restoration Design Project |

On October 27, 2022, PacifiCorp emailed the two draft proposals received to the ACC to provide review time prior to applicant presentations scheduled for November 10, 2022 **(Appendix C)**.

At the November 10, 2022 ACC meeting, each applicant conducted a PowerPoint presentation for ACC review and opportunity to comment and ask additional questions.

The Utilities submitted the final proposals and scoring template to the ACC via email on January 10, 2023 for a 30-day review and comment period (**Appendix D**).

The ACC met February 9, 2023, for an Aquatic Fund Project Proposal Decision Meeting and review of the master scoring template for each project. To accommodate those ACC representatives not in attendance, the Utilities provided an additional 7-day review and comment period until close of business February 21, 2023.

Consensus was reached on a final Resource Project list as follows and ACC comments and decisions were captured in the **Attachment A**:

| Applicant | Project Title | Funding Requested | ACC Decision | Proposal Location |
|---|---|---|---|---|
| USDA Forest Service | Clear Creek and Clearwater Creek Restoration Implementation | $3,126,667 | Approved | Appendix E |
| Phil Roni, Cramer Fish Sciences | Pine Creek Restoration Design Project | $214,236 | Approved | Appendix F |

## Projects Selected for Funding

The following is a summary description of the individual Resource Projects selected to be funded by the Aquatics Fund. The selected Projects are expected to promote the recovery of anadromous fish post re-introduction upstream of the Lewis River dams, and the federally listed bull trout which spend a portion of their life history in the Lewis River hydroelectric project reservoirs. Included for the selected projects is an overview of the original proposals, any ACC modifications to the projects, and identification of Resource Project nexus to the hydroelectric projects. Final Resource Project Plans are provided as an appendix to this document.

### 1. Clear Creek and Clearwater Creek Restoration implementation – USFS

ACC representatives agreed to fund this project as proposed and granted funding of $3,126,667. The final Resource Project Plan is provided in **Appendix E** and includes the following priorities and tasks:

## Priorities

### Priority 1: Benefit fish recovery throughout the North Fork Lewis River, with priority to federal ESA-listed species.

Lower Columbia ESU Chinook, Coho, and Steelhead trout are listed as a threatened species under the ESA. This project will contribute to the recovery of these species by increasing the amount and quality of water and pools. In addition, constructed log complexes will increase spawning habitat.

### Priority 2: Support the reintroduction of anadromous fish throughout the basin.

This proposal will complete the design for enhancement of over 13 miles of rearing and refugia habitat for juvenile anadromous salmonids. Once implemented, the project will improve the habitat characteristics that will promote survival and promotion of reintroduced anadromous fish.

### Priority 3: Enhance fish habitat in the Lewis River Basin-, with priority given to the North Fork Lewis River.

This project is located in the North Fork Lewis River basin and will restore and enhance habitat in Clear Creek and Clearwater Creek, which are tributaries to the North fork Lewis River. This project will improve aquatic function and increase instream habitat diversity and is expected to contribute toward increasing fish production in the North Fork Lewis River and its tributaries.

## Tasks

### Wood sourcing (during winter, spring, summer of 2023)

The Forest Service will initiate the planning phases and secure nearby wood for the sourcing and storage of wood. The Forest Service will be looking at nearby stands to evaluate where wood can come from to implement the project successfully.

### Project NEPA (Forest Service will ensure all requirements are met)

Forest Service staff will initiate NEPA documentation for the project and work with the 10 design team to ensure proposed treatments comply with recent revisions in Forest Service programmatic biological opinion coverage.

### Contracting

Contract out for implementation

### Project Implementation

Wood placement by both Helicopter and Excavator.

## 2. Pine Creek Restoration Design Project

ACC representatives agreed to fund this project as proposed and granted funding of $214,236. The ACC agreed that all funds for this project would be wholly distributed from the Lewis River Bull Trout Fund. The final Resource Project Plan is provided in **Appendix F** and includes the following objectives and tasks:

### Objectives

The overall goal of the Pine Creek Restoration Design Project is to improve instream habitat complexity and riparian habitat in Pine Creek to address key limiting factors. Specifically, we aim to:

1) Improve habitat complexity in simplified reaches through large wood placement
2) Stabilize sediment to allow for riparian succession to mature conifer forest
3) Increase side channels and spawning habitat for Bull Trout and steelhead
4) Protect existing quality spawning habitat for Bull Trout and steelhead
5) Create resting areas for spawning adult Bull Trout and steelhead
6) Improve holding pools for juvenile Bull Trout and steelhead
7) Improve overwintering habitat for salmonids
8) Reduce or stabilize incision rates in areas with floodplain pockets

### Tasks

#### *Task 1: Site investigation and baseline assessment*

This task will include a kickoff meeting with PacifiCorp staff, the ACC and project partners; a review of existing data; a geomorphic field investigation and site survey; a riparian and geomorphic assessment; an assessment of hydrology; and development of a hydraulic model.

#### *Task 2: Design*

##### *2.1: Alternatives analysis and concept design – 15% design*

We will develop a conceptual design including up to three (3) alternatives and/or a priority tiered instream habitat approach informed by data collected in Task 1. We will submit the 15% design to PacifiCorp staff and ACC for review and discuss comments and questions via a virtual meeting.

##### *2.1: Draft construction plan – 30% design*

We will incorporate the comments on the 15% conceptual design and alternatives analysis into the 30% basis of design report and plan sheets.

### *2.3: Permit ready designs – 60-80% design*

We will incorporate the comments from the 30% draft construction design plans into the 60-80% basis of design report and plan sheets. We will also begin the permitting process.

### *2.4: Final construction plan – 95-100% design*

Comments from the 80% design plans will be incorporated into the 95-100% final construction plan design report and plan sheets. We will submit design drawings that will be consistent with the Washington State Recreation and Conservation Office Manual 18 guidelines and will reflect all required regulatory conditions needed to facilitate permitting, contracting, and the bid process. If construction funding is secured, design will be progressed to 100%. If construction funding is not secured, the design will be progressed to 95% to allow for modifications pending construction fund acquisition.

## *Task 3: Monitoring and photo documentation*

We will provide photo documentation of habitat conditions at the project site before, during and after project completion.

## *Task 4: Project management and coordination*

This task will include time and resources for internal project management among the design team and coordination with stakeholders to complete the project. We will facilitate a project kick-off meeting with the design team, PacifiCorp, the ACC, and interested stakeholders prior to beginning the project. Creating project update memos to be submitted with invoices will also fall under this task. The design team will also participate in
a final site visit to close out the project.

# APPENDIX A

Lewis River Settlement Agreement Article 7.5

7.5 Aquatics Fund. PacifiCorp Energy and Cowlitz PUD shall establish the Lewis River Aquatics Fund ("Aquatics Fund") to support resource protection measures ("Resource Projects"). Resource Projects may include, without limitation, projects that enhance and improve wetlands, riparian, and riverine habitats; projects that enhance and improve riparian and aquatic species connectivity that may be affected by the continued operation of the Projects; and projects that increase the probability for a successful reintroduction program. The Aquatics Fund shall be a Tracking Account maintained by the Licensees with all accrued interest being credited to the Aquatics Fund. PacifiCorp Energy shall provide $5.2 million, in addition to those funds set forth in Section 7.1.1, to enhance, protect, and restore aquatic habitat in the Lewis River Basin as provided below. Cowlitz PUD shall provide or cause to be provided $520,000 to enhance, protect, and restore aquatic habitat in the Lewis River Basin as provided below; provided that Cowlitz PUD's funds may only be used for Resource Projects upstream of Swift No. 2, including without limitation the Bypass Reach. The Licensees shall provide such funds according to the schedules set forth below.

7.5.1 PacifiCorp's Contributions.

a. PacifiCorp shall make funds available as follows: on each April 30 commencing in 2005, $300,000 per year until 2009 (a total of $1.5 million).

b. For each of the Merwin, Yale, and Swift No. 1 Projects, PacifiCorp shall make one-third of the following funds available as follows after the Issuance of the New License for that Project: on each April 30 commencing in 2010, $300,000 per year through 2014 (a total of $1.5 million); on each April 30 commencing in 2015, $100,000 per year through 2018 (a total of $400,000); and on each April 30 commencing in 2019, $200,000 per year through 2027 (a total of $1.8 million); provided that, for any New License that has not been Issued by April 30, 2009, the funding obligation for that Project shall be contributed annually in the same amounts but commencing on April 30 following the first anniversary of Issuance of the New License for that Project.

c. PacifiCorp shall contribute $10,000 annually to the Aquatics Fund as set forth in Section 7.1.1.

7.5.2 Cowlitz PUD's Contributions. Cowlitz PUD shall make or cause to be made funds available as follows: $25,000 per year on each April 30 following the first anniversary of the Issuance of the New License for the Swift No. 2 Project through the April 30 following the 20th anniversary of the Issuance of the New License for the Swift No. 2 Project (a total of $500,000); and a single amount of $20,000 on the April 30 following the 21st anniversary of the Issuance of the New License for the Swift No. 2 Project.

7.5.3 Use of Funds. Decisions on how to spend the Aquatics Fund, including any accrued interest, shall be made as provided in Section 7.5.3.2 below; provided that (1) at least $600,000 of such monies shall be designated for projects designed to benefit bull trout according to the following schedule: as of April 30, 2005, $150,000; as of April 30,

2006, $100,000; as of April 30, 2007, $150,000; as of April 30, 2008, $100,000; and on or before the April 30 following the fifth anniversary of the Issuance of all New Licenses, $100,000; and such projects shall be consistent with bull trout recovery objectives as determined by USFWS; (2) fund expenditures for the maintenance of the Constructed Channel (Section 4.1.3) shall not exceed $20,000 per year on average; (3) if studies indicate that inadequate "Reservoir Survival," defined as the percentage of actively migrating juvenile anadromous fish of each of the species designated in Section 4.1.7 that survive in the reservoir (from reservoir entry points, including tributary mouths to collection points) and are available to be collected, is hindering attainment of the Overall Downstream Survival standard as set forth in Section 3, then at least $400,000 of such monies shall be used for Resource Projects specifically designed to address reservoir mortality; and (4) $10,000 annually shall be used for lower river projects as set forth in Section 7.1.1. Projects shall be designed to further the objectives and according to the priorities set forth below in Section 7.5.3.1.

7.5.3.1 Guidance for Resource Project Approval and Aquatics Fund Expenditures.

a. Resource Projects must be consistent with applicable Federal, State, and local laws and, to the extent feasible, shall be consistent with policies and comprehensive plans in effect at the time the project is proposed. These may include, but are not limited to, Washington's Wild Salmonid Policy, the Lower Columbia River Bull Trout Recovery Plan, and the Lower Columbia River Anadromous Fish Recovery Plan.

b. The Aquatics Fund shall not be used to fund Resource Projects that any entity is otherwise required by law to perform (not including obligations under this Agreement or the New Licenses for use of the Aquatics Fund), unless by agreement of the ACC.

c. The Licensees shall evaluate Resource Projects using the following objectives:

(1) benefit fish recovery throughout the North Fork Lewis River, with priority to federal ESA-listed species;

(2) support the reintroduction of anadromous fish throughout the Basin; and

(3) enhance fish habitat in the Lewis River Basin, with priority given to the North Fork Lewis River.

For the purposes of this Section 7.5, the North Fork Lewis River refers to the portion of the Lewis River from its confluence with the Columbia River upstream to the headwaters, including tributaries except the East Fork of the Lewis River.

The Licensees shall also consider the following factors to reflect the feasibility of projects and give priority to Resource Projects that are more practical to

implement:

(i) Whether the activity may be planned and initiated within one year,

(ii) Whether the activity will provide long-term benefits,

(iii) Whether the activity will be cost-shared with other funding sources,

(iv) Probability of success, and

(v) Anticipated benefits relative to cost.

7.5.3.2 Resource Project Proposal, Review, and Selection.

(1) By the first anniversary of the Effective Date, the Licensees shall develop, in Consultation with the ACC, (a) a strategic plan consistent with the guidance in Section 7.5.3.1 above to guide Resource Project development, solicitation, and review; and (b) administrative procedures to guide implementation of the Aquatics Fund. Both may be modified periodically with the approval of the ACC.

(2) Any person or entity, including the Licensees, may propose a Resource Project. In addition, the Licensees may solicit Resource Projects proposals from any person or entity.

(3) The Licensees shall review all Resource Project proposals, applying the guidance set forth in Section 7.5.3.1. The Licensees shall provide an annual report describing proposed Resource Project recommendations to the ACC. The date for submitting such report shall be determined in the strategic plan defined in subsection 7.5.3.2(1) above. The report will include a description of all proposed Resource Projects, an evaluation of each Resource Project, and the basis for recommending or not recommending a project for funding.

(4) The Licensees shall convene a meeting of the ACC on an annual basis, no sooner than 30 days and no later than 60 days after distribution of the report set forth in Section 7.5.3.2(2), for Consultation regarding Resource Projects described in the report.

(5) Licensees shall modify the report on proposed Resource Projects, based on the above Consultation, and submit the final report to the ACC within 45 days after the above Consultation. Any ACC member may, within 30 days after receiving the final report, initiate the ADR Procedures to resolve disputes relating to Resource Projects. If the ADR Procedures are commenced, the Licensees shall defer submission of the

final report on Resource Projects to the Commission, if necessary, until after the ADR Procedures are completed. If the ADR Procedures fail to resolve all disputes, the Licensees shall provide the comments of the ACC to the Commission. If no ACC member initiates the ADR Procedures, the Licensees shall submit the final report to the Commission, if necessary, within 45 days after submission of the final report to the ACC.

# APPENDIX B

Letter to interested parties from T. Olson, PacifiCorp
Availability of Funds for Aquatic Related Projects in the Lewis River Basin

PACIFICORP

**Pacific Power |**
**Rocky Mountain Power**
825 NE Multnomah, Suite 1800
Portland, Oregon 97232

August 9, 2022

**Subject: Availability of Funds for Aquatic Related Projects in the Lewis River Basin**

Dear Interested Party:

PacifiCorp owns the Merwin, Yale, and Swift No. 1 hydroelectric projects on the Lewis River in southwest Washington. Public Utility District No. 1 of Cowlitz County, Washington (Cowlitz PUD) owns the Swift No. 2 hydroelectric project, also located on the Lewis River. These projects are operated as a coordinated system. On November 30, 2004, the Lewis River Settlement Agreement (SA) established the Lewis River Aquatic Fund (Fund). On June 26, 2008, the Federal Energy Regulatory Commission acknowledged this fund as a stipulation of project operating licenses. The purpose of the Fund is to support resource protection measures via aquatic related projects (Projects) in the Lewis River basin. To be considered for funding, the Projects must meet each of the following priority objectives as specified in the project operating licenses and the SA:

*(1) Benefit to fish recovery throughout the North Fork Lewis River, with priority to federal ESA-listed species;*

*(2) Support of the reintroduction of anadromous fish throughout the Basin; and*

*(3) Enhancement to fish habitat in the Lewis River Basin, with priority given to the North Fork Lewis River.*

This letter is to provide you the opportunity to submit proposals for Resource Project funding. The total Fund amount available this year is limited to **$3,283,539.02** for Resource Projects and **$673,846.76** for Bull Trout Projects. Design-only projects will be considered during this 2022/2023 funding cycle and will be evaluated for biological merit. If you know of other entities that may have an interest in seeking funding, please forward this opportunity to them. All Lewis River Aquatic Fund documents and process timeline can be located at the following link: https://www.pacificorp.com/energy/hydro/lewis-river/aquatic-fund-applications.html

The Aquatic Fund Subgroup to the Aquatic Coordination Committee (ACC) completed a **Lewis River Aquatic Fund Priority Reaches** document which provides priority rankings for stream reaches within the Lewis River watershed. The Priority Reaches document is aligned with the Lower Columbia Fish Recovery Board (LCFRB) Interactive map which is found on their website at www.lowercolumbiasalmonrecovery.org/mappage. The interactive maps provide a wealth of information that should help project proponents in selecting areas to focus their habitat improvement efforts. For consideration of funding the proponent must demonstrate that they have reviewed both the Priority Reaches and the LCFRB Interactive map and selected appropriate projects/reaches from those two tools. Additionally, proponent must show how proposed project is consistent with fund objectives and priorities. Projects proposed in reaches other than those identified in the Priority Reaches document or high priority reaches in the LCFRB habitat strategy (Tier 1 and Tier 2) need a clear explanation of why they still support Lewis River Aquatic Fund goals.

To be consistent with certain comprehensive plans such as the *Lower Columbia Salmon Recovery Plan and the Washington Department of Fish & Wildlife Subbasin Plan (LCFRB 2010)* relating to Lewis River reintroduction efforts and the recovery of ESA listed threatened salmon and steelhead species, higher priority will be given to Resource Projects that provide benefits to Recovery Plan priority fish species and stocks reintroduced to or originating from upstream of Merwin Dam, with emphasis on spring Chinook. Resource Projects must have specific objectives and expected outcome(s) that help attain the objectives of the Aquatic Fund.

Bull Trout Project funding is available this year and we invite you to review the December 2017 Bull Trout project identification assessment. Proposals will be evaluated according to alignment with the assessment.
https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/energy/hydro/lewis-river/license-implementation/acc/LR_BT_Hab_Restor_FinalReport.pdf

To be considered, applicants must submit a completed draft **Full Proposal Form** by close of business **October 22, 2022** and obtain acknowledgement from all owners of land needed to access the proposed Resource Project. Landowner(s) must sign a **Landowner Acknowledgement Form** indicating they are aware that the project is being proposed on their property.

Each applicant will have an opportunity for a project presentation to the ACC on **November 10, 2022** with final full proposals due by **December 30, 2022**. Full proposals will be evaluated and scored based on four primary categories: 1) benefits to fish, 2) scientific validity, (3) feasibility and (4) cost effectiveness. The Utilities and representatives of the Lewis River ACC will finalize a list of selected Resource Projects on **February 9, 2023** and notify applicants shortly thereafter. The Utilities will submit the final list to the Federal Energy Regulatory Commission by the submittal deadline of April 15, 2023.

Please give attention to this excellent opportunity. If you have any questions please contact Mr. Erik Lesko, PacifiCorp (503) 813-6624 or erik.lesko@pacificorp.com.

We look forward to your response in October.

Sincerely,

Todd Olson

Todd Olson
Director, Licensing and Compliance
PacifiCorp – Renewable Resources

# APPENDIX C

Email dated October 27, 2022
From Beth Bendickson (PacifiCorp) to ACC
2022/2023 Lewis River Aquatic Fund Proposals

## Lesko, Erik (PacifiCorp)

**From:** Bendickson, Beth (PacifiCorp)
**Sent:** Thursday, October 27, 2022 1:17 PM
**To:** Aaron Roberts; Adam Cole; Alex Maslov; Amanda Froberg; Bill Sharp; Bonnie Shorin; Bridget Moran; Bryce Glaser; Christina E Donehower; James Byrne; Janae Brock; Jeffrey Garnett; Jonathan Stumpf; Joshua Chapman; Joshua Jones; Josua Holowatz; Karchesky, Chris (PacifiCorp); Keely Murdoch; Kyle Wright; Lesko, Erik (PacifiCorp); Mariah Stoll-Smith Reese; Nicholas Grant; Peggy Miller; Rudy Salakory; Steve Manlow; Steve West
**Subject:** 2022/2023 Lewis River Aquatic Fund Proposals

Attn ACC representatives:

For your review, I am pleased to distribute two draft proposals for funding consideration under the Lewis River Aquatic Fund. A summary of each proposal received including a link to the draft proposal is provided below.

| Title | Applicant | Requested Funding | Link to draft proposal |
|---|---|---|---|
| Pine Creek Restoration Design | Cramer Fish Sciences and Columbia Land Trust, Phil Roni | $191,222 | https://www.pacificorp.com/energy/hydro/lewis-river/aquatic-fund-applications.html |
| Clear Creek and Clearwater Creek Restoration Implementation | USFS, Greg Robertson | $3,126,667 | |

Each applicant will have an opportunity for a project presentation at our November 10, 2022, ACC meeting. **Please take some time to review each of the proposals prior to our November meeting and be prepared to ask questions of the applicants after their presentations.** This is an important component in the review process to identify potential concerns (fatal flaws) and provide initial feedback to assist each applicant in developing final project proposals by December 30, 2022. There will also be an opportunity to provide written questions to each applicant by December 2, 2022.

If you should have any questions regarding the process or project applications, please feel free to contact me.

Thank you and I look forward to hearing more about each of these proposals on November 10, 2022.

Erik Lesko
Aquatics Program Lead
825 NE Multnomah, 1800 LCT | Portland, OR, 97232
503-813-6624 | Cell : 503-412-8401

# APPENDIX D

Email dated January 10, 2023
from Erik Lesko (PacifiCorp) to ACC
Distribution of final Proposals and Evaluation Template

# 2022 Aquatic Fund Proposal and Scoring Evaluation Template

Lesko, Erik (PacifiCorp)

Reply | Reply All | Forward | ...

To Aaron Roberts; Adam Cole; Alex Maslov; Amanda Froberg; Bill Sharp; Bonnie Shorin; Bridget Moran; Bryce Glaser; Christina E Donehower; Dalton Fry; James Byrne; Janae Brock; Jeffrey Garnett; Jonathan Stumpf; Joshua Chapman; **+12 others**

Tue 1/10/2023 12:45 PM

Cc Bendickson, Beth (PacifiCorp); smontgomery@anchorqea.com; Larissa Rohrbach (lrohrbach@anchorqea.com)

2022_2023 ACC Aquatic Fund Scoring Template and Instructions.xlsx
.xlsx File

Clear and Clearwater Creek Restoration Implementation_Final Proposal.pdf
.pdf File

Pine Creek Restoration Design_Final Proposal.pdf
.pdf File

ACC Representatives,

PacifiCorp has received two Lewis River aquatic fund proposals for the 2022/2023 funding cycle. I have attached both of these final proposals along with an updated 2022/2023 scoring template. Each proposal includes a completed ACC comment/response matrix. I will spend just a few minutes reviewing the schedule and scoring template at our meeting this week. Instructions for scoring are also included in the Excel file. I will get both proposals (along with any supporting documentation) posted on our website this week.

To prepare for our project selection meeting:

1) Please email me your completed scoring template by **February 3, 2023**.
2) I will distribute a consolidated 'master' scoring spreadsheet to the ACC on **February 6, 2023**
3) Our project selection meeting is scheduled for **February 9, 2023.**

Please feel free to give me a call or email if you have any comments or questions.

Thanks,

Erik

**Aquatic Fund Proposals Received**

| Project Title | Project Managers | Requested Funding |
|---|---|---|
| Pine Creek Restoration Design Project | Phil Roni, Cramer Fish Sciences | $214,236 |
| Clear Creek and Clearwater Creek Restoration Implementation | Greg Robertson, USFS | Option 1 = $3,126,667 |
| | | Option 2 = $2,600,000 |

# APPENDIX E
## FINAL PROPOSAL FORM
Clear and Clearwater Creek Restoration implementation

# FULL PROPOSAL FORM

***Lewis River Aquatic Fund***

Form Intent:
To provide a venue for an applicant to clearly indicate the technical basis and support for proposed project. Specifically, the project's consistency with recovery plans, Settlement Agreement Fund objectives and priorities, technical studies and assessments which support the proposed action and approach.

Full Proposal format:
Please complete the following form for your Full Proposal. Maps, design drawings and other supporting materials may be attached.

The deadline for a Final Full Proposal Form submission is **2023**. Please submit materials to:

Erik Lesko
PacifiCorp
825 NE Multnomah Street, Suite 1800
Portland, OR 97232
Erik.lesko@pacificorp.com

1. Project Title
   **Clear Creek and Clearwater Creek Restoration Implementation**

2. Requested Funding Amount $3,126,667; total cost of implementation including In-kind funds $3,986,667

3. Project Manager
   Greg Robertson, greg.robertson2@usda.gov, (509) 395-3366

4. Identification of problem or opportunity to be addressed

**Problem:**
Sections of Clear Creek and Clearwater Creek contain essential habitat for species listed under the Endangered Species Act (ESA) and include Coho and Chinook salmon, and Steelhead trout. Effects to aquatic habitat in these creeks include the 1980 eruption of Mt. St Helens and past land management activities such as logging, road building, stream wood removal, and development of hydro-resources, which until recently has blocked all anadromous species access to the Upper North Fork Lewis River watershed. To ensure reintroduction efforts of salmon and steelhead into the Lewis River and its tributaries above the dams are successful, the Forest Service in partnership with the Aquatic Coordination Committee has implemented a variety of aquatic habitat improvement projects including; construction of acclimation ponds for juvenile spring Chinook salmon, road decommissioning, replacement of migration blocking culverts with bridges, and numerous streambank and instream fish habitat restoration projects. However, additional work remains to improve habitat for Chinook, Coho, and Winter Steelhead.

Past instream restoration projects in Clear and Clearwater Creeks were limited in scope and scale with project objectives focusing on bank protection and log scour rather than process-based restoration. Previous projects were not designed with 2D hydraulic model and were not designed or stamped by a certified hydraulic engineer. Many of the log jams and acclimation ponds washed out during floods in 2016. Lessons learned from past aquatic restoration projects in these creeks have highlighted the need for a broader-scale process-based restoration planning and design effort to improve aquatic habitat, build stream habitat resiliency, and improve floodplain and side channel connectivity. Hydraulic and geomorphic analysis and alternative design analysis was completed in summer 2022.

**Opportunity:**
The Clear Creek and Clearwater Creek project is in alignment with Lewis River goals by benefiting federal ESA-listed species, through enhancing fish in habitat in the Lewis River Basin that will help support the reintroduction of anadromous fish throughout the basin. Clear Creek and Clearwater are above the Lewis River hydropower system, which has blocked upstream adult migration from the mid-1930s until eight years ago. As part of the most recent FERC license, PacifiCorp and Cowlitz PUD (utilities) are implementing salmon and steelhead reintroduction in the upper basin. Adult Coho, Steelhead, and spring Chinook are transported and released to the upper basin to spawn naturally. Coho are currently using the site in sufficient numbers to populate off-channel areas, and we anticipate greater numbers of upstream-bound adults as populations grow above the hydropower system. This project is well-timed to take advantage of increasing numbers of adults we expect to be using the reach in future years.

The 2010 Lower Columbia Salmon Recovery and Fish & Wildlife Subbasin Plan's EDT analysis predicts high potential for Coho production throughout the project area, and medium to low production potential for spring Chinook and winter steelhead. Spring Chinook is the only Primary population in the upper Lewis subbasin, and must be recovered to a high level of viability to meet regional recovery goals. Coho and winter steelhead are contributing populations and must be recovered to a medium level of viability to meet regional salmon recovery goals; the Tier-2 reach designation of Clear Creek and Clearwater Creek reflects the lower priority of Coho recovery. Surveyors have documented bull trout in the area, but their level and pattern of use is unknown. Cutthroat populations in Clearwater Creek also persist.

The Gifford Pinchot National Forest, propose to complete habitat restoration implementation for Clear Creek and Clearwater Creek with a focus on process-based geomorphic restoration to improve aquatic function and habitat, and build resiliency to the potential impacts of climate change. Clear Creek and Clearwater Creek Restoration implementation will focus on restoring broader stream function to encourage resilient aquatic ecosystems that will respond to climate change stressors.

Aquatic Funds would be used to implement project with excavator work in lower Clear Creek and helicopter in both Clear and Clearwater Creeks.

5. Background

Provide information related to how this project fits into greater watershed objectives and any previously collected information at the project site (e.g. fish surveys, habitat delineation, etc.)

The proposed Clear Creek and Clearwater Creek implementation project are above Swift Reservoir and North Fork Lewis River, WA, Skamania County. Each begin at the confluence with the Muddy River and end further up each stream to the upstream extent of anadromous habitat (Figure 1). Approximate restoration implementation river miles (RM) for Lower Clear Creek RM 0-6.2, Upper Clear Creek RM 6.2-8.7, and Clearwater Creek RM 0-5.2 (Table 1). The restoration implementation will focus on where excavator access is feasible and where the stream it is not accessible by excavator, to helicopter wood into those areas. This incorporates the strategy of implementing the excavator reaches first to capture mobilized wood that has been helicoptered or recruited naturally at a later date and to retain the wood in the system. Both Clear and Clearwater Creeks have a disrupted wood recruitment cycle through past land management and the eruption of Mt St Helens.

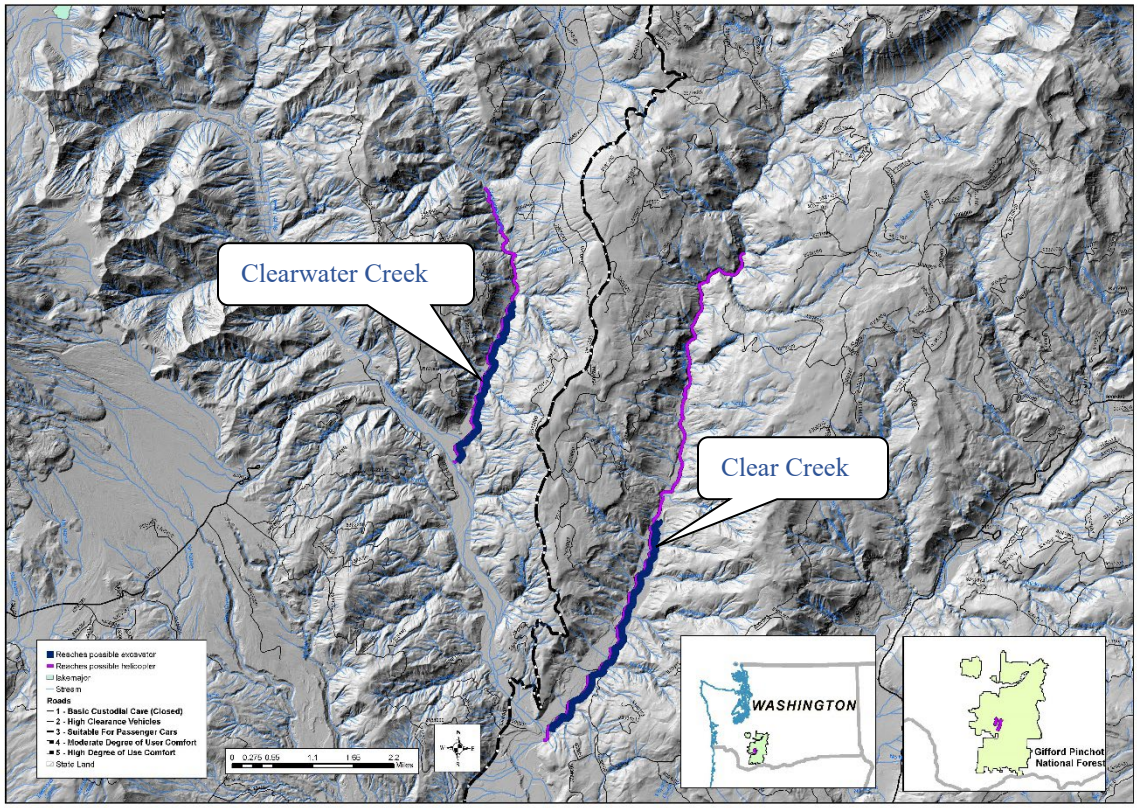



**Figure 1. Clear Creek and Clearwater Creek stream restoration locations.**

**Table 1. Fish resources present at the site and targeted by this project.**

| Reach Name | LCFRB Tier | Length | | Tier Length | Strategy Excavator (Length) | Strategy Helicopter (Length) |
|---|---|---|---|---|---|---|
| | Ranking | Feet | Miles | Tier II | Tier II | Tier II |
| **Lower Clear Creek** | 2 | 32646 | 6.2 | 6.2 | 3.8 | 2.4 |
| **Upper Clear Creek** | 2 | 13200 | 2.5 | 2.5 | 0 | 2.5 |
| **Clearwater Creek** | 2 | 27451 | 5.2 | 5.2 | 0 | 3.0 |

Focal fish species of both reintroduced anadromous and of resident life histories use Clear and Clearwater Creeks for spawning, incubation, rearing, and foraging as adults and would benefit from implementing the proposed design (Table 2). Recent data on the spatial distribution of spring Chinook and Coho from redd surveys collected by PacifiCorp in 2017 indicate that spring Chinook utilize both Clear and Clearwater Creeks for spawning, in addition to the mainstem North Fork Lewis below the Lower Lewis River falls and the confluence of Swift Reservoir, the Muddy River near the confluence of Clear Creek, and at Drift Creek near the confluence of Swift Reservoir (Figure 2). Coho have also used Clear and Clearwater Creeks and have distributed their presence within the Upper North Fork Lewis River at greater levels in both release from trap and haul and in numbers of redds (Figure 3).

**Table 2. Fish resources present at the site and targeted by this project.**

| Species | Life History Present (egg, juvenile, adult) | Current Population Trend (decline, stable, rising) | ESA Coverage (Y/N) | Life History Target (egg, juvenile, adult) |
|---|---|---|---|---|
| Coho | Egg, juvenile, adult | Rising (reintroduction) | Y | Egg, juvenile, adult |
| Spring Chinook | Egg, juvenile, adult | Rising (reintroduction) | Y | Egg, juvenile, adult |
| Winter Steelhead | Egg, juvenile, adult | Rising (reintroduction) | Y | Egg, juvenile, adult |
| Bull trout | Adult | Decline or stable | Y | Egg, juvenile, adult |

Recent data on the spatial distribution of spring Chinook and Coho redd surveys (2017) shared by PacifiCorp indicate that spring Chinook have used both Clear and Clearwater Creeks for spawning. Other areas of spawning are focused in the mainstem North Fork Lewis below the Lower Lewis River falls and the confluence of Swift Reservoir, the Muddy River near the confluence of Clear Creek, and at Drift Creek near the confluence of Swift Reservoir (Figure 3, Figure 4).

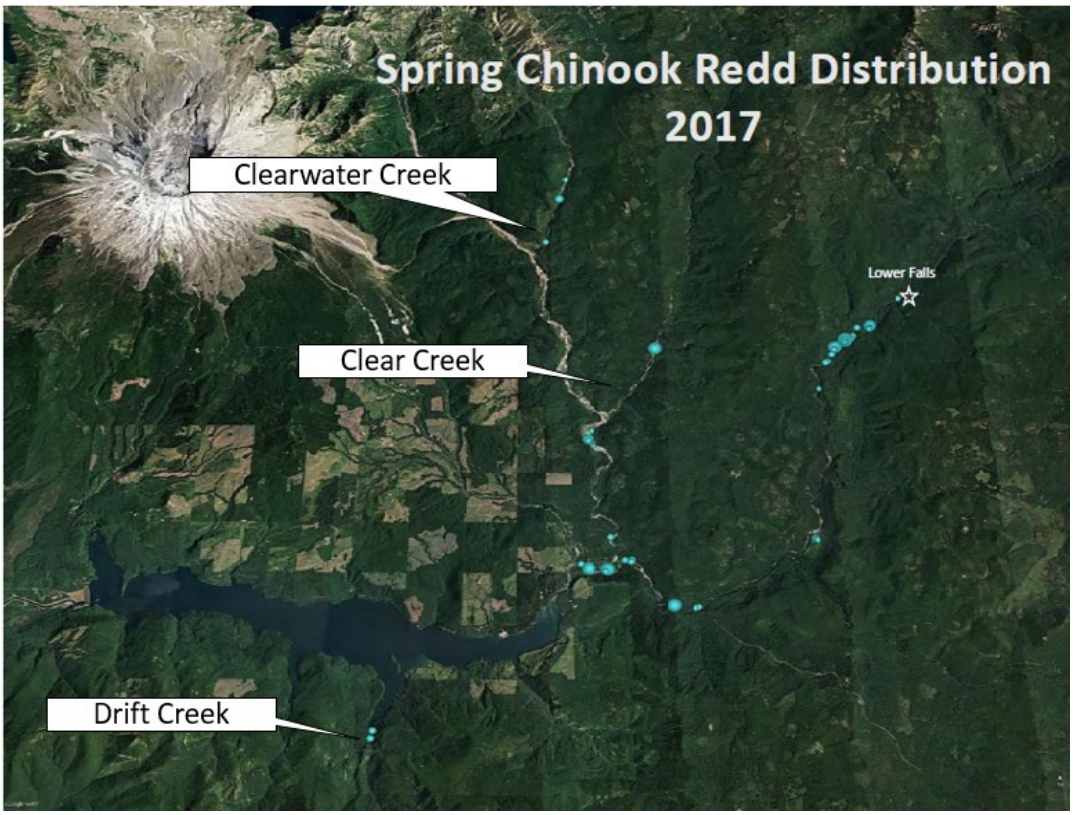



**Figure 3. 2017 spring Chinook redd distribution within the Upper North Fork Lewis River. Source: PacifiCorp.**

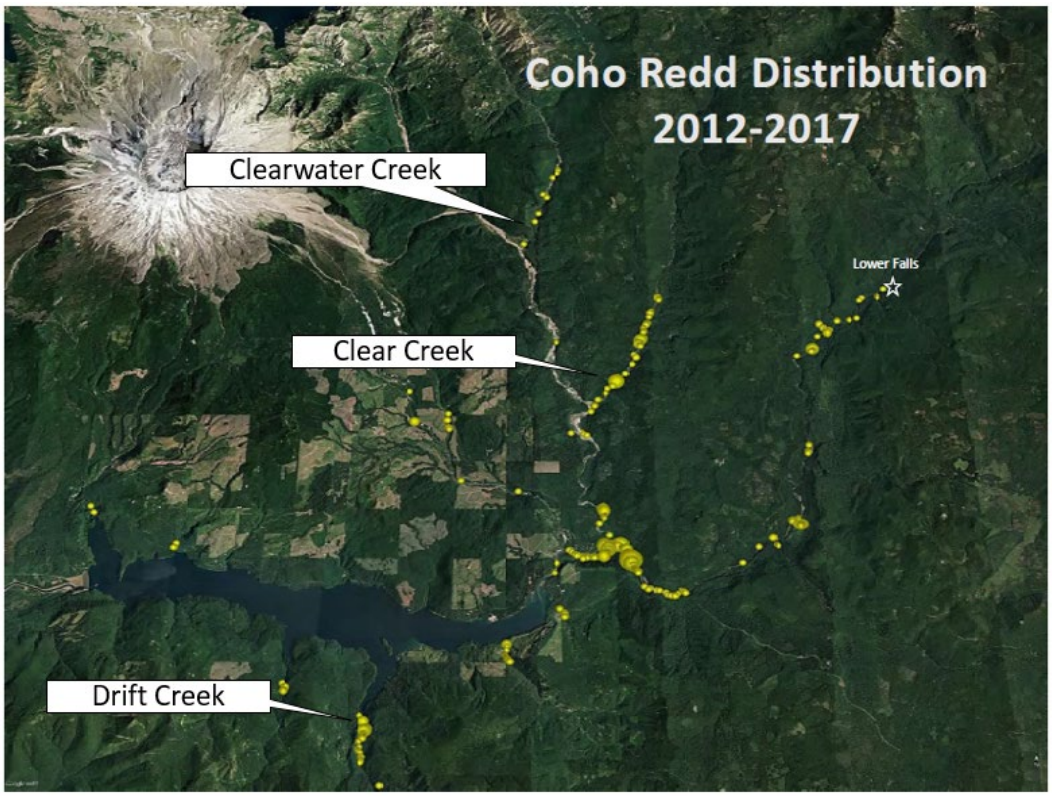



**Figure 4. 2012-2017 Coho redd distribution within the Upper North Fork Lewis River. Source: PacifiCorp.**

**Lower Columbia River Salmon Recovery Board, Ecosystem Diagnosis and Treatment Analysis, and Aquatic Coordination Group Synthesis Rankings**

## Clear Creek

The 2009 Lower Columbia Salmon Recovery Board (LCFRB) identifies Clear Creek (Reach 23) as a Tier 2 medium priority reach. Ecosystem Diagnosis and Treatment (EDT) analysis identifies medium production potential for spring Chinook, high for winter Steelhead, and low potential for Coho. The ACC Synthesis Matrix rated this section of the river as having low restoration potential and as a Primary Coho population area, and a low rating for Coho reach potential. Habitat needs in this reach were identified as low for instream LWM, and high for competition and predation. It has a Primary population designation for Chinook, a Contributing population designation for Coho, and a Contributing population designation for winter Steelhead.

**Table 3. Lower Clear Creek (Tier 2) RM 0-8.7 reach and multiple species priority LCFRB ranking.**

| Species | Reach Potential |
|---|---|
| Coho | H |
| Spring Chinook | M |
| Winter Steelhead | L |
| **Restoration Needs** | **Multiple Species Priority** |
| Floodplain function and channel migration Process | H |
| lnstream flows | H |
| Off channel & side channel habitat | H |
| Riparian conditions & functions | H |
| Stream channel habitat structure and bank stability | H |
| Watershed conditions & hillslope processes | H |
| Access to blocked habitats | L |
| Regulated stream management for habitat functions | L |
| Water quality | L |

## Clearwater Creek

The Lower Columbia Salmon Recovery Board identifies this as a Tier 2 reach. For Coho salmon it has an Overall Preservation rank of 4 of 100, and Overall Restoration rank of 21 of 103, this means it is highly valued and should respond very well to restoration efforts. An EDT analysis concludes there are high concerns from lack of habitat diversity and quantity and altered thermal regimes as well as excessive sediment load and lack of food. Moderate concerns were identified for channel stability, hatchery fish competition, and water flow (EDT). This reach is also designated as a Contributing Population for Coho and has Coho reach potential rating of High. It is designated a Primary Population for Chinook and has Chinook reach potential rating of Medium. It is also designated as a Stabilizing Population for Steelhead and has a steelhead reach potential rating of Medium. Bull trout are not officially documented in Clearwater Creek, although presence is noted in several anecdotal accounts.

**Table 4. Clearwater Creek (Tier 2) RM 0-5.2 reach and multiple species priority LCFRB ranking.**

| Species | Reach potential |
|---|---|
| Coho | H |
| Spring Chinook | M |
| Winter Steelhead | M |
| **Restoration Needs** | **Multiple Species Priority** |
| Floodplain function and channel migration Process | H |
| Instream flows | H |
| Off channel & side channel habitat | H |
| Riparian conditions & functions | H |
| Stream channel habitat structure and bank stability | H |
| Watershed conditions & hillslope processes | H |
| Access to blocked habitats | L |
| Regulated stream management for habitat functions | L |
| Water quality | L |

Climate Change Resiliency

The Gifford Pinchot National Forest completed a climate change vulnerability assessment in October 2019. With respect to watershed stewardship, this analysis focused on potential thermal impacts to anadromous fish species, emphasizing the need to build aquatic habitat resiliency and connectivity. Key themes from this analysis include strategic prioritization and restoration of natural thermal, hydrologic, and wood regimes, and management of fluvial connectivity and assisted migration.

Previous Restoration Efforts

Previous instream projects have occurred on both Clear and Clearwater Creeks in 2010 and 2013 respectively. The Clear Creek restoration effort added approximately 950 trees from river mile 0-1.3 in 36 structure sites and the Clearwater Creek restoration effort added 900 trees from river mile 0-1.7 in 62 structure sites. Both projects structure implementation and construction mainly focused on bank protection and channel margin work and (Figure 5).

**Figure 5. Example of a bank protection structure constructed on Clear Creek, 2010. Approximately 50 trees were used in this structure.**

After an approximate 50-year recurrence flood event in December of 2016 there were many waterways within the Upper North Fork Lewis River that experienced significant channel change. This flood induced movement of placed wood in Clear and Clearwater Creeks, failures at the acclimation ponds on the Muddy River and Clear Creek also impacted several additional projects funded through the Aquatic Fund.

6. Project Objective(s)

This project aims to restore hydrologic function and aquatic/riparian ecological function of Clear and Clearwater Creeks to benefit aquatic species and riparian dependent species. The objectives of the project are:

- Restore instream fish habitat for all accessible miles of fish habitat for native fish species;
- Improve water storage and hyporheic exchange by restoring floodplain connectivity;
- Establish reconnection with floodplain terraces to help restore riparian areas and decrease erosive power. Riparian/Instream restoration will strengthen ecosystem resistance against extreme floods and altered surface flows anticipated from climate change;
- Strengthen linkages between aquatic and terrestrial systems, making both more resilient and resistant to the stresses imposed by climate change.

These objectives will lead to improved habitat complexity and diversity increasing the number, area, and depth of pools, increase stable wood accumulations, increase the extent and age of riparian and island vegetation, and increase the amount of suitable spawning

and rearing habitat (i.e., species-appropriate depth, velocity, substrate, and cover) for coho, spring Chinook, and winter steelhead. Providing refugia during winter flows for juvenile salmonids, rearing opportunities for juvenile salmonids during summer months and increased spawning opportunities for adult salmonids.

The project fits well with regional recovery plan and habitat strategy guidance. This project is proposed in reaches identified in the Priority Reaches document and high priority reaches in the LCFRB habitat strategy (Each Stream is designated as Tier 2). EDT analysis that underpins the Lower Columbia's habitat strategy indicates that the reaches identified will benefit from restoration efforts, with off-channel & side channel habitat, riparian conditions & functions, and stream channel habitat structure and bank stability all meriting high multi-species priorities.

This project addresses the following Aquatic Fund priorities:

**Priority 1: Benefit fish recovery throughout the North Fork Lewis River, with priority to federal ESA-listed species.**

Lower Columbia ESU Chinook, Coho, and Steelhead trout are listed as a threatened species under the ESA. This project will contribute to the recovery of these species by increasing the amount and quality of water and pools. In addition, constructed log complexes will increase spawning habitat.

**Priority 2: Support the reintroduction of anadromous fish throughout the basin.**

This proposal will complete the design for enhancement of over 13 miles of rearing and refugia habitat for juvenile anadromous salmonids. Once implemented, the project will improve the habitat characteristics that will promote survival and promotion of reintroduced anadromous fish.

**Priority 3: Enhance fish habitat in the Lewis River Basin-, with priority given to the North Fork Lewis River.**

This project is located in the North Fork Lewis River basin and will restore and enhance habitat in Clear Creek and Clearwater Creek, which are tributaries to the North fork Lewis River. This project will improve aquatic function and increase instream habitat diversity and is expected to contribute toward increasing fish production in the North Fork Lewis River and its tributaries.

7. Tasks

1) **Wood sourcing** (during winter, spring, summer of 2023)- The Forest Service will initiate the planning phases and secure nearby wood for the sourcing and storage of wood. The Forest Service will be looking at nearby stands to evaluate where wood can come from to implement the project successfully.

2) **Project NEPA** (Forest Service will ensure all requirements are met) Forest Service staff will initiate NEPA documentation for the project and work with the

design team to ensure proposed treatments comply with recent revisions in Forest Service programmatic biological opinion coverage.

3) **Contracting-** Contract out for implementation

4) **Project Implementation** –Wood placement by both Helicopter and Excavator.

## 8. Methods

This proposal is an implementation project. A geomorphic and hydraulic analysis and alternative analysis with design was completed summer 2022. Alternative 1 and 3 for Clear Creek and alternative 1 with some riparian tree felling for Clearwater Creek were chosen. Designs include bankfull width, plan view drawing overlaid with proposed actions of specific dimensions, and project profile and cross sections at important project locations showing water surface elevations relevant to the design including design flows. Design took into account implementation and cost and looked for the most effective and cost-efficient instream work that is possible. See attached geomorphic and hydraulic assessment, and final alternative analysis, and alternative analysis design set.

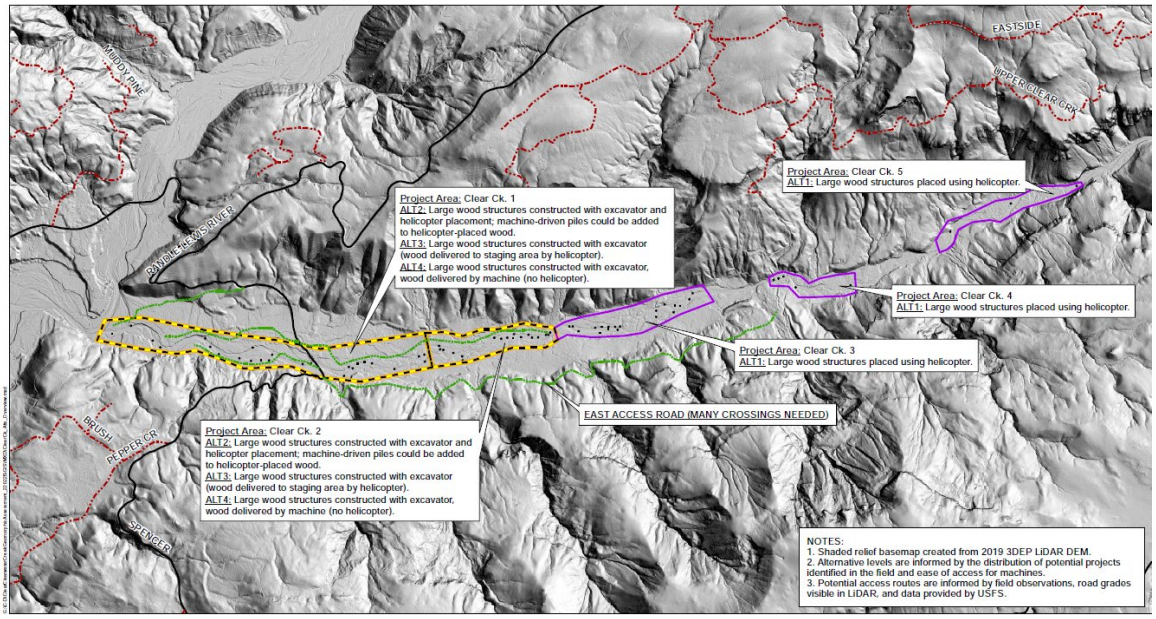



Figure 6. Clear Creek wood placement with helicopter and excavator. Alternative 1 and 3 were chosen.

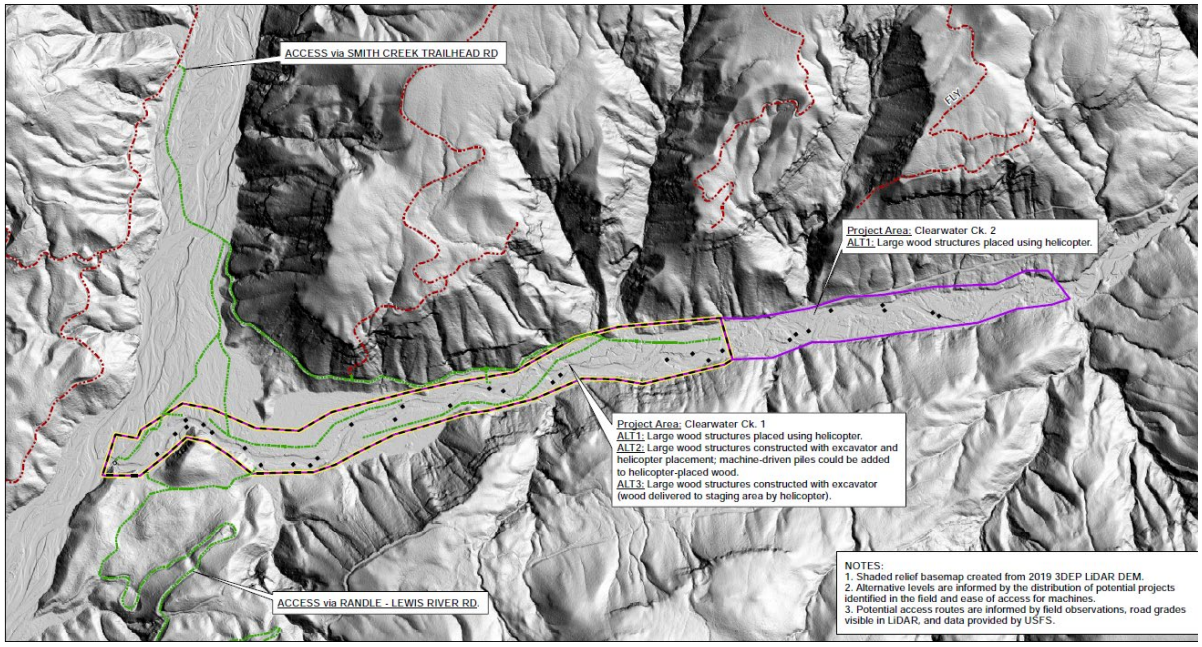


Figure 7. Clearwater Creek wood placement by helicopter. Alternative 1 was chosen.

9. Specific Work Products

Deliverables on Clear Creek and Clearwater Creek:

- Wood Sourcing
- NEPA completion
- Contracting
- Large Wood Structure placement
- Project Monitoring
-

10. Project Duration

- Initiation of project- As soon as funding is available (Spring 2023-Fall 2023)

- Completion date for each milestone or major task
  - Wood Acquisition (Winter 2023)
  - NEPA (2022-2023)
  - Large Wood Structure placement (Summer 2024-Summer 2027)
  - Project Monitoring (2024 - 2029)

- Project close-out site visit (with PacifiCorp, Cowlitz PUD, and ACC representatives) (Summer/Fall 2027)

11. Permits and Authorizations

Identify any applicable permits and resource surveys required for project. Please include timeline for obtaining and any action taken to-date. Applicant will be responsible for securing all such necessary permits. Obtain permission of all owners of

land used for access to and completion of the project. **Landowner(s) must sign PacifiCorp's Release Agreement prior to finalization of a Funding Agreement with PacifiCorp.**

Project implementation will be consistent with provisions in the Forest Service's MOU with WDFW, the Aquatic Restoration Biological Opinion II, Regional General Permit 8 with the US Army Corps of Engineers, and the WA Department of Ecology Water Quality Certification, an Appendix of RGP-8. Permits will be obtained Winter 2023-Spring 2024 for implementation.

12. Matching Funds and In-kind Contributions

The Forest Service will provide project contract and implementation oversite and provide resources necessary (Table 5)

**Table 5. USFS in-Kind funds for the Clear and Clearwater Creek implementation.**

| USFS In-Kind Funds | Quantity | Cost |
|---|---|---|
| **NEPA, Contracting, and implementation oversite** | **300 days, 3 people @ $400/day** | **$360,000** |
| **Trees** | **6,500 @ $77 a tree from FS Land** | **500,000** |
| | **Total In-Kind** | **$860,000** |

13. Peer Review of Proposed Project

Proposed Project has been reviewed by FS employees, DJ&A and Interfluve.

14. Budget

**Table 6. Budget for the Clear and Clearwater Creeks Implmentation.**

| **For Project Implementation–** estimated 11.4 total miles of stream, with 4 miles of excavator access and 7.4 miles of helicopter access. | | |
|---|---|---|
| **Item** | **Clear Creek** | **Clearwater Creek** |
| Tree acquisition, push over, full tree | $250,000 | $50,000 |
| Excavator placement | $170,000 | $0 |
| Helicopter placement | $2,100,000 | $466,667 |
| Equipment mobilization | $80,000 | $10,000 |
| Creek Total Cost | $2,600,000 | $526,667 |
| | **Project Request** | **$3,126,667** |

***Total Project Cost with request and in-kind contribution: $3,986,667**

**Option 1: fund all – $3,126,667**
**Option 2: fund just Clear Creek $2,600,000**

15. Photo Documentation (*Per National Marine Fisheries Service's Biological Opinion for Relicensing of the Lewis River Hydroelectric Projects – August 27, 2007*):

Photos will be collected during pre, during, and post implementation.

16. Insurance. All qualifying applicants shall comply with PacifiCorp's insurance requirements set forth in Appendix A. The policy limits are deemed sufficient by PacifiCorp for project activities involving significant risk, including placement of large woody debris in navigable waterways, and are presumed to be sufficient for all activities likely to be funded under this Full Proposal Form. Should applicant's insurance program not meet these requirements, bid pricing should include any additional costs applicant would incur to comply with these requirements

## Appendix A
## Insurance Requirements
## (Risk Mgmt to evaluate risk by project and report needed insurance limits to Lewis River Project Coordinator)

1. INSURANCE

Without limiting any liabilities or any other obligations of [CONTRACTOR], [CONTRACTOR] shall, prior to commencing the Project, secure and continuously carry with insurers having an A.M. Best Insurance Reports rating of A-:VII or better the following insurance coverage:

1.1 Workers' Compensation. [CONTRACTOR] shall comply with all applicable Workers' Compensation Laws and shall furnish proof thereof satisfactory to PacifiCorp prior to commencing the Project.

All Workers' Compensation policies shall contain provisions that the insurance companies will have no right of recovery or subrogation against PacifiCorp, its parent, divisions, affiliates, subsidiary companies, co-lessees, or co-venturers, agents, directors, officers, employees, servants, and insurers, it being the intention of the parties that the insurance as effected shall protect all parties.

1.2 Employers' Liability. Insurance with a minimum single limit of $1,000,000 each accident, $1,000,000 disease each employee, and $1,000,000 disease policy limit.

1.3 Commercial General Liability. The most recently approved ISO policy, or its equivalent, written on an occurrence basis, with limits not less than $1,000,000 per occurrence/ $2,000,000 general aggregate (on a per location and/or per job basis) bodily injury (with no exclusions applicable to injuries sustained by volunteers working or participating in the Project) and property damage, including the following coverages:

a. Premises and operations coverage
b. Independent contractor's coverage
c. Contractual liability
d. Products and completed operations coverage

e. Coverage for explosion, collapse, and underground property damage
f. Broad form property damage liability
g. Personal and advertising injury liability, with the contractual exclusion removed
h. Sudden and accidental pollution liability, if appropriate
i. Watercraft liability, either included or insured under a separate policy

1.4 Business Automobile Liability. The most recently approved ISO policy, or its equivalent, with a minimum single limit of $1,000,000 each accident for bodily injury and property damage including sudden and accidental pollution liability, with respect to [CONTRACTOR]'s vehicles whether owned, hired or non-owned, assigned to or used in the performance of the Project.

1.5 Umbrella Liability. Insurance with a minimum limit of $4,000,000 each occurrence/aggregate where applicable to be provided on a following form basis in excess of the coverages and limits required in Employers' Liability insurance, Commercial General Liability insurance and Business Automobile Liability insurance above. [CONTRACTOR] shall notify PacifiCorp, if at any time their minimum umbrella limit is not available during the term of this Agreement, and will purchase additional limits, if requested by PacifiCorp.

In addition to the requirements stated above any and all parties providing underground locate, engineering, design, or soil sample testing services including [CONTRACTOR], subcontractor and all other independent contractors shall be required to provide the followings insurance:

Professional Liability: [CONTRACTOR] (or its contractors) shall maintain Professional Liability insurance covering damages arising out of negligent acts, errors or omissions committed by [CONTRACTOR] (or its contractors) in the performance of this Agreement, with a liability limit of not less than $1,000,000 each claim. [CONTRACTOR] (or its subcontractors of any tier) shall maintain this policy for a minimum of two (2) years after completion of the work or shall arrange for a two (2) year extended discovery (tail) provision if the policy is not renewed. The intent of this policy is to provide coverage for claims arising out of the performance of work or services contracted or permitted under this Agreement and caused by any error, omission for which the [CONTRACTOR] its subcontractor or other independent contractor is held liable.

Except for Workers' Compensation insurance, the policies required herein shall include provisions or endorsements naming PacifiCorp, its affiliates, officers, directors, agents, and employees as additional insureds.

To the extent of [CONTRACTOR]'s negligent acts or omission, all policies required by this Agreement shall include provisions that such insurance is primary insurance with respect to the interests of PacifiCorp and that any other insurance maintained by PacifiCorp is excess and not contributory insurance with the insurance required hereunder, provisions that the policy contain a cross liability or severability of interest clause or endorsement,

and that [CONTRACTOR] shall notify PacifiCorp immediately upon receipt of notice of cancellation, and shall provide proof of replacement insurance prior to the effective date of cancellation. No required insurance policies, except Workers' Compensation, shall contain any provisions prohibiting waivers of subrogation. Unless prohibited by applicable law, all required insurance policies shall contain provisions that the insurer will have no right of recovery or subrogation against PacifiCorp, its parent, affiliates, subsidiary companies, co-lessees, agents, directors, officers, employees, servants, and insurers, it being the intention of the Parties that the insurance as effected shall protect all parties.

A certificate in a form satisfactory to PacifiCorp certifying to the issuance of such insurance shall be furnished to PacifiCorp prior to commencement of the Project by [CONTRACTOR] or its volunteers or contractors. If requested, [CONTRACTOR] shall provide a copy of each insurance policy, certified as a true copy by an authorized representative of the issuing insurance company, to PacifiCorp.

[CONTRACTOR] shall require subcontractors who perform work at the Project to carry liability insurance (auto, commercial general liability and excess) workers' compensation/ employers' or stop gap liability and professional liability (as required) insurance commensurate with their respective scopes of work. [CONTRACTOR] shall remain responsible for any claims, lawsuits, losses and expenses including defense costs that exceed any of its subcontractors' insurance limits or for uninsured claims or losses.

PacifiCorp does not represent that the insurance coverage's specified herein (whether in scope of coverage or amounts of coverage) are adequate to protect the obligations [CONTRACTOR], and [CONTRACTOR] shall be solely responsible for any deficiencies thereof.

# Appendix B

# Response to ACC Requests for Clarification

**Request: Is project occurring in a mapped floodway, per FEMA?**

The project is in an area where floodways have not been mapped by FEMA. However, the project is located within the channel and floodplain of Clear and Clearwater creeks. Project activities are designed to restore natural channel and floodplain function, and will likely raise water levels in areas where channel incision has resulted in altered flood elevations. The risk to Forest Service or private infrastructure from the project is minimal. The project is located entirely on National Forest System Lands, with no private lands on Clear or Clearwater Creeks downstream of the project area. In addition, there are no roads or other infrastructure adjacent to or downstream of the project.

# 2022-23 Aquatic Fund Proposals - ACC Question and Response Matrix

## Clear Creek and Clearwater Creek Restoration Implementation

| Representative | Question | Response |
|---|---|---|
| WDFW | The proposal request for Aquatics Funds (AF) would likely deplete the current AF balance. The ACC would not be able to fund other proposals until annual deposits sufficiently increase the balance.<br>Please consider a phased approach to reduce the initial funding request. This may increase the overall cost of the project however it may allow the ACC to fund additional proposal requests. The next phase could be funded near or after the first phase is completed. | We have decided to offer 2 options:<br>Option 1: fund all that was requested<br>Option 2: fund just Clear Creek<br><br>Phase approach increase overall cost. Just to mobilize helicopter in is $50,000. There are also increase an incredible amount of FS employee time, from funding proposal, funding transfers, to contracting, to on the ground work. Phase the approach will also put pressure on all our other priority projects on the forest. In a world where we are trying to increase scale and pace and be as efficient as possible a phase approached goess against our strategy. |
| WDFW | What would a phased approach look like?<br>Is it possible to implement the Clear Creek excavator placement and the Clearwater Creek helicopter placement as the first phase, and defer the Clear Creek helicopter placement this time?<br>How would this change the budget? | Helicopter is used to bring the wood down from the mountain for the excavator placement as well as places where the excavator will not be used. Trucking logs from where we are currently thinking we are getting the logs will be the same cost as helicopter but we will not get full trees. Phased approach involves multiple helicopter mobilizations which will increase costs by a lot. |
| WDFW | Alternative 1 was chosen for Clear Creek (Figure 6 Clear Creek wood placement with helicopter and excavator.). Project areas Clear Creek 1 & 2 do not list an alternative 1 as an option. Does that mean work in Project areas Clear Creek 1 & 2 will be deferred to another proposal?<br>Excavator work in Clear Creek is included in the budget. | I made a mistake in the proposal. Clear Creek alternative 1 and 3 would be used. All areas will be covered. Upper reaches will be by helicopter placement and lower reaches will be placed by excavator with wood being delivered via helicopter. |
| WDFW | Acquisition of trees is included in in-kind service/matching funds and as part of the AF request.<br>Please explain the differences between USFS in-Kind funds - 6,500 trees @ $77/tree from FS land and Project Request - Tree acquisition, push over, full tree. Will the project require additional trees beyond the 6,500 trees from FS lands? | USFS is giving the trees for free. Many times one needs to buy the trees. The $77 a tree is our estimate of what the tree costs. That does not include actually getting the trees and moving them to the project site. We believe 6500 trees is all that is needed. |

| | | |
|---|---|---|
| WDFW | How are requested funds adjusted for inflation? (2027?) | Requested funds were adjusted for 2023 contract award that would cover for 2023-2028 BPA task order regional contract that we are using to as a contract mechanism |
| WDFW | What kind of post treatment monitoring is planned? Will this be fish use or a structure persistence? | Monitoring will be done by photos which will help us identify structure movement. Pacific Corp already does fish monitoring we can look at that data to see if we have made a difference in populations. |
| PacifiCorp | May want to include any post-monitoring conducted for Clear Creek (RM 0 to 1.3) in 2010, or Clearwater (RM 0 to 1.7) in 2013. Any stream response would be helpful to include as the ACC evaluates the benefits and risks of these new proposals. | This is could be a benefit to show how previous restoration was not adequate. We will attempt to add it. |
| PacifiCorp | Clear Creek – based on previous observations and surveys (Meridian Environmental), reaches upstream of the bridge appear to have adequate wood, including fallen old growth. There are sections without much wood, but this would be expected as wood naturally racks up in jams. It is surprising that reaches upstream of the bridge are identified as restoration priority given the existing habitat – most of which we consider to be reference examples of ideal habitat. Therefore, we recommend focusing the final Clear Creek proposal on the reach downstream of the bridge to the confluence with the Muddy River. | There are sections above the bridge that have wood but “adequate” is not the word we would describe the reach. We believe for a healthy riparian floodplain that is resistant to climate change there needs to be valley wall to valley wall of trees with chance of tree recruitment. Currently that does not exist and much of the wood that is in the river is deteriorating with healthy large old growth tree recruitment is 100’s of years away. With this we believe fish habitat and resilience could improved. |
| PacifiCorp | Clearwater - We have concerns with costs and sustainability of wood jam placement in higher gradient upper reaches. The proposal would benefit by addressing the challenges and potential risks of creating sustainable wood jams in the selected areas of higher gradients. Also, any additional specific justifications (e.g., mitigates this limiting factor) would be helpful. Note - Clearwater supports a healthy resident cutthroat population and the proposal should acknowledge the presence of cutthroat in the enhancement area. | Cutthroat have been added. Most of the jams are in lower gradient reaches where full length trees should have a pretty good chance of staying put. The Forest Service will also fall some larger riparian trees to help create sustainable log jams. |
| PacifiCorp | General Comment – Proposed total costs would eliminate the aquatics fund and therefore represents a risk if the project does not provide long-term benefits to priority species. Proposed costs are in addition to the $333,520 | We have provided the trees and our time as match. By the USFS completing the project we are already reducing costs extremely. We currently do not have other means to match this project. |

| | | |
|---|---|---|
| | already funded for the design work. Obtaining matching or additional funding would make this proposal stronger. | |
| PacifiCorp | Inconsistency - Table 6 of the proposal (Clearwater) shows $0 for excavator work, however Table 1 indicates 2.2 miles of excavator work. | Clearwater alternative is helicopter only. I have removed the 2.2 miles of excavator work in table 1. |
| PacifiCorp | We could not find any language requiring the use of stamped designs for ELJ's to receive aquatic funding. | Thank you for looking into this 😊 |

# APPENDIX F
## FINAL PROPOSAL FORM
Pine Creek Restoration Design Project

# LEWIS RIVER AQUATIC FUND

PacifiCorp

## Pine Creek Restoration Design Project

CRAMER FISH SCIENCES®
*An Employee Owned Consulting Company*

Columbia Land Trust

Submitted by Cramer Fish Sciences and Columbia Land Trust

Phil Roni, Ph.D.
Cramer Fish Sciences
1125 12th Ave. NW, Suite B-1
Issaquah, WA 98027
206-612-6560
phil.roni@fishsciences.net

CRAMER FISH SCIENCES®
An Employee Owned Consulting Company

1125 12th Ave. NW, Suite B-1
Issaquah, WA 98027
V 206.612.6560
www.fishsciences.net

December 30, 2022

Erik Lesko
PacifiCorp
825 NE Multnomah Street, Suite 1800
Portland, OR 97232

Re: Lewis River Aquatic Fund

Dear Erik:

We are pleased to submit the following proposal for a restoration design project on Pine Creek. Reaches 1, 2, 4, 5 and 6 of Pine Creek are identified as high priority for steelhead and Bull Trout restoration (LCFRB SalmonPort) and previous assessments have indicated the need to restore instream (complexity, wood, gravel) and riparian conditions in these reaches. Pine Creek has been identified as one of the most important Bull Trout spawning streams in the Lewis Basin. In partnership with the Columbia Land Trust, we propose to complete a holistic assessment and restoration design for appropriate sections of Pine Creek to increase the amount, quality, and resiliency of suitable Bull Trout and salmon habitat while protecting existing high-quality habitat.

We will first conduct a holistic assessment of upland, riparian, and instream conditions using previous assessment data, supplemented with targeted new field data, to identify appropriate areas for restoration. We will then develop process-based restoration designs that will assist with continued recovery of instream and riparian habitat in appropriate areas of priority Pine Creek reaches. We will focus on reaches that have lower use by spawning Bull Trout and areas of simple channel types that currently provide marginal spawning habitat. Thus, our designs will build out from Bull Trout strongholds in Pine Creek to enhance habitat and benefit Bull Trout, steelhead, and salmon recovery in Pine Creek and throughout the North Fork Lewis River.

This project addresses all three priority objectives of the Lewis River Aquatic Fund including benefiting recovery of ESA listed species in the North Fork of the Lewis, supporting reintroduction of anadromous fish throughout the Basin, and enhancing fish habitat in the North Fork of Lewis Basin. It is also in alignment with and builds off the Bull Trout Habitat Restoration Identification Assessment (Lamperth et al. 2017). With our experience working and conducting assessments in the North Fork of Lewis, completing process-based restoration designs to restore salmon and Bull Trout habitat, and our partnership with Columbia Land Trust, we can successfully complete this project on schedule and within the budget. We appreciate the feedback from the Aquatic Coordination Committee (ACC) on our initial submission. We have addressed all comments and questions and included the comment matrix with this submission. Please contact me at (206) 612-6560 or phil.roni@fishsciences.net if I can provide you with any additional information.

Sincerely,

Phil Roni
Vice President / Principal Scientist
Cramer Fish Sciences

**Table of Contents**

# 1 PROJECT TITLE

Pine Creek Restoration Design Project

# 2 REQUESTED FUNDING AMOUNT AND SOURCE

$214,236

This project is primarily focused on Bull Trout; however, it will also consider and benefit steelhead, spring Chinook, and Coho Salmon. Therefore, we are requesting consideration for both the Bull Trout Project fund for this design work and the Resource Project fund for future construction work (not included in this proposal).

# 3 PROJECT MANAGER

**Phil Roni, Ph.D.**
1125 12th Ave. NW, Suite B-1
Issaquah, WA 98027
V 206.612.6560
phil.roni@fishsciences.net

# 4 IDENTIFICATION OF PROBLEM

Pine Creek is one of the most important Bull Trout spawning streams in the Lewis Basin, with some areas of high-quality habitat and others of degraded habitat due to both human (forestry) and natural (eruption of Mt. St. Helens) causes. There are multiple reaches in Pine Creek and its tributaries that are priorities for restoration for Bull Trout or steelhead and previous assessments have indicated the need to address limiting habitat conditions such as channel complexity (large wood, side channels), sediment, and riparian condition. We proposed to develop restoration designs for appropriate sections of Pine Creek to increase the amount of suitable Bull Trout habitat as well as habitat quality and resiliency to disturbance. We will do this through a holistic assessment of upland, riparian, and instream conditions using previous assessment data, supplemented with targeted new field data, to identify appropriate areas for restoration and develop process-based restoration designs that will assist with continued recovery of instream and riparian habitat. We recognize that Pine Creek is a high energy stream where restoration will only be appropriate in selected areas with proper conditions and habitat potential. Moreover, any restoration efforts should occur adjacent to and protect current areas extensively utilized for Bull Trout spawning.

# 5 BACKGROUND

Pine Creek is a major tributary to the North Fork Lewis River and provides important habitat for one of the three remaining spawning populations of ESA listed Lewis River Bull Trout *Salvelinus confluentus* as well as important habitat for steelhead *Oncorhynchus mykiss.* It is also utilized by listed Coho Salmon *O. kisutch* and spring Chinook Salmon *O. tshawytscha*. The Lower Columbia Salmon Recovery and Fish and Wildlife Subbasin Plan indicates that Pine Creek is the number one area with the greatest current or potential production of Bull Trout in the upper North Fork Lewis Basin (LCFRB 2010). The plan states that Bull Trout may benefit from targeted riparian and stream channel restoration in reaches of Pine Creek.

Pine Creek drains approximately 68 $km^2$ and is mixed ownership by the U.S. Forest Service (USFS), private timberlands, as well as some private residential tracts in the lower reaches (Figure 1). Amid an upsurge of unchecked development in the mid-2000s, Columbia Land Trust collaborated with Pope Resources (a Washington-based timber company) and Skamania County to develop a comprehensive conservation effort to protect 20,000 acres around Swift Reservoir from development. The Columbia Land Trust purchased 2,330 acres east of Pine Creek in 2013 and an additional 3,095 acres of contiguous forest land west of Pine Creek in 2014. Together, the two purchases protect the majority of the watershed from development. The Columbia Land Trust is managing these lands to benefit Bull Trout, northern spotted owls, and gray wolves. The focus of management to date has been on moving the industrially managed forest to a natural, old growth forest structure benefiting these species.

There have been periodic assessments of the conditions in Pine Creek including work by the USFS, U.S. Geological Survey (USGS), Washington Department of Fish and Wildlife (WDFW), and PacifiCorp as well as on going spawner surveys by PacifiCorp. A watershed assessment in the 1990s by the USFS indicated concerns with peak flows due to young vegetation and high forest road density as well as mass wasting water quality concerns due to unstable and erodible sediments (USFWS 1995b, USFS 1996). More recent habitat surveys by the USGS in Pine Creek tributaries (P1 and P7) similarly showed very low levels of pool habitat, little to no large woody debris (LWD), and poor riparian condition (PacifiCorp 2016). Large woody debris concentrations in Pine Creek are low (<40 pieces per mile) and it also has low recruitment potential as a result of logging and the 1980 eruption of Mt. St. Helens. Additionally, resulting channel instability and migration have impeded mature conifer growth leading to a riparian corridor dominated by immature alders. EDT modeling efforts for Chinook, Coho, and steelhead indicate that portions of Pine Creek are limited by habitat diversity (complexity/large wood) and sediment, while others, like P8, are key habitats (PacifiCorp 2016).

More recent work found that Bull Trout redds in the Pine Creek Basin were 4 times more likely to occur in reaches with complex channels (i.e., more than one channel with flowing water during base flow conditions) than reaches with only one main channel and redd occurrence was negatively related to stream depth. This suggests that habitat complexity and depth at the reach scale are important factors influencing Bull Trout spawning site selection within thermally suitable habitat (Lamperth et al. 2017). The study recommends restoration actions that increase channel complexity in the coldest accessible stream reaches within the basin. Recent spawner surveys suggest that with increasing numbers of Bull Trout, spawners are moving into lower quality areas to spawn.

According to SalmonPORT, Pine Creek Reach 1, 2, 4, 5, and 6 are Tier 2 priority reaches, have high potential as contributing reaches for winter steelhead, and are designated as a high or medium multi-species priority for several restoration needs as shown in Table 1.

*Table 1. Multi-species (steelhead, spring Chinook Salmon, Coho Salmon) restoration needs for Pine Creek, as reported on SalmonPORT. H = high (red), M = medium (yellow), L = low (green).*

| | Pine Creek Reaches and Multi-Species Priority | | | | | |
|---|---|---|---|---|---|---|
| **Restoration Needs** | **1** | **2** | **3** | **4** | **5** | **6** |
| Off channel and side channel habitat | H | H | H | H | H | H |
| Riparian conditions & functions | H | H | H | H | H | H |
| Stream channel habitat structure & bank stability | H | H | H | H | H | H |
| Watershed conditions & hillslope processes | H | H | H | H | H | H |
| Floodplain function & channel migration processes | H | H | H | H | H | M |
| Instream flows | M | H | M | M | M | M |
| Access to blocked habitats | L | L | L | L | L | L |
| Regulated stream mgt. for habitat functions | L | L | L | L | L | L |
| Water quality | L | L | L | L | L | L |

Although Bull Trout redds have been documented in Pine Creek, in 2014 Reach 1 and 4 had no documented redds and Reach 3 had only one documented redd (Figure 2). In years of higher Bull Trout spawner abundance, such as 2021 and 2022, some redds have been documented in these reaches (PacifiCorp pers. comm). Therefore, there is an opportunity to improve complexity in these reaches for the benefit of spawning Bull Trout as well as other species, while avoiding areas of currently high-quality Bull Trout spawning habitat. Other Pine Creek reaches and tributaries are listed as Tier 4 reaches in SalmonPORT (Pine Creek 3, P8), though they may also benefit from restoration.

Given the recently improved protection and ownership status of Pine Creek, the ongoing riparian and upland forest restoration, the priority reaches identified in SalmonPORT, and previous assessment work identifying limiting factors and Bull Trout habitat restoration opportunities, there is a unique opportunity to design holistic instream and riparian restoration in selected reaches of Pine Creek to benefit Bull Trout as well as salmon and steelhead. Pine Creek does present some unique challenges from an instream restoration standpoint given that many reaches are high energy and previous work by the USFS in Reach 2 were not entirely successful. However, that project used traditional log structures that are commonly used in low energy streams. We would let the assessment and analysis determine the type of wood placement that would be most successful and focus on more process-based approaches for placing wood. Ultimately, this project will complete a holistic analysis and successful restoration design to restore riparian and aquatic habitat function for Bull Trout and other salmonids in Pine Creek.

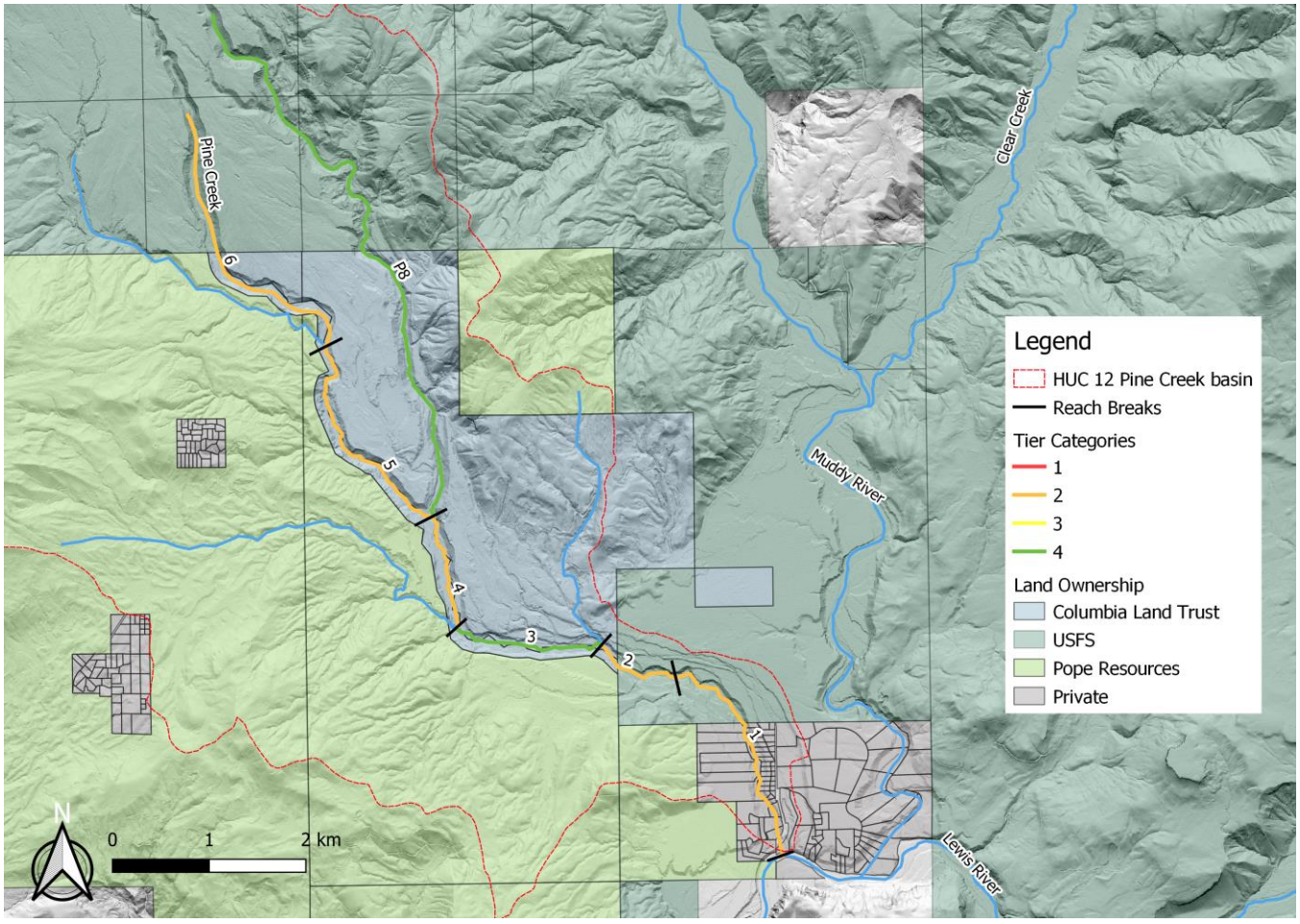



*Figure 1. Map showing 100 m reaches, Tier category of each reach, and land ownership in the Pine Creek basin, WA.*

# 6 PROJECT OBJECTIVES

The overall goal of the Pine Creek Restoration Design Project is to improve instream habitat complexity and riparian habitat in Pine Creek to address key limiting factors. Specifically, we aim to:

1. Improve habitat complexity in simplified reaches through large wood placement
2. Stabilize sediment to allow for riparian succession to mature conifer forest
3. Increase side channels and spawning habitat for Bull Trout and steelhead
4. Protect existing quality spawning habitat for Bull Trout and steelhead
5. Create resting areas for spawning adult Bull Trout and steelhead
6. Improve holding pools for juvenile Bull Trout and steelhead
7. Improve overwintering habitat for salmonids
8. Reduce or stabilize incision rates in areas with floodplain pockets

We anticipate that we will focus habitat improvements on reaches 1 (upstream of private parcels), 2, 4, and 5 of Pine Creek and potentially other reaches or tributaries with relatively low spawner density and simplified habitat on Columbia Land Trust and USFS lands (Figure 1). These reaches have areas of simple channel types and lower use by spawning Bull Trout (Figure 2; Lamperth et al. 2017). Thus, our objective is to build out from strongholds of high-quality Bull Trout habitat in Pine Creek to enhance habitat and benefit Bull Trout and steelhead recovery throughout the North Fork Lewis River. This will also ensure protection of existing areas of high-quality Bull Trout spawning habitat in Pine Creek and address reach-specific limiting factors.

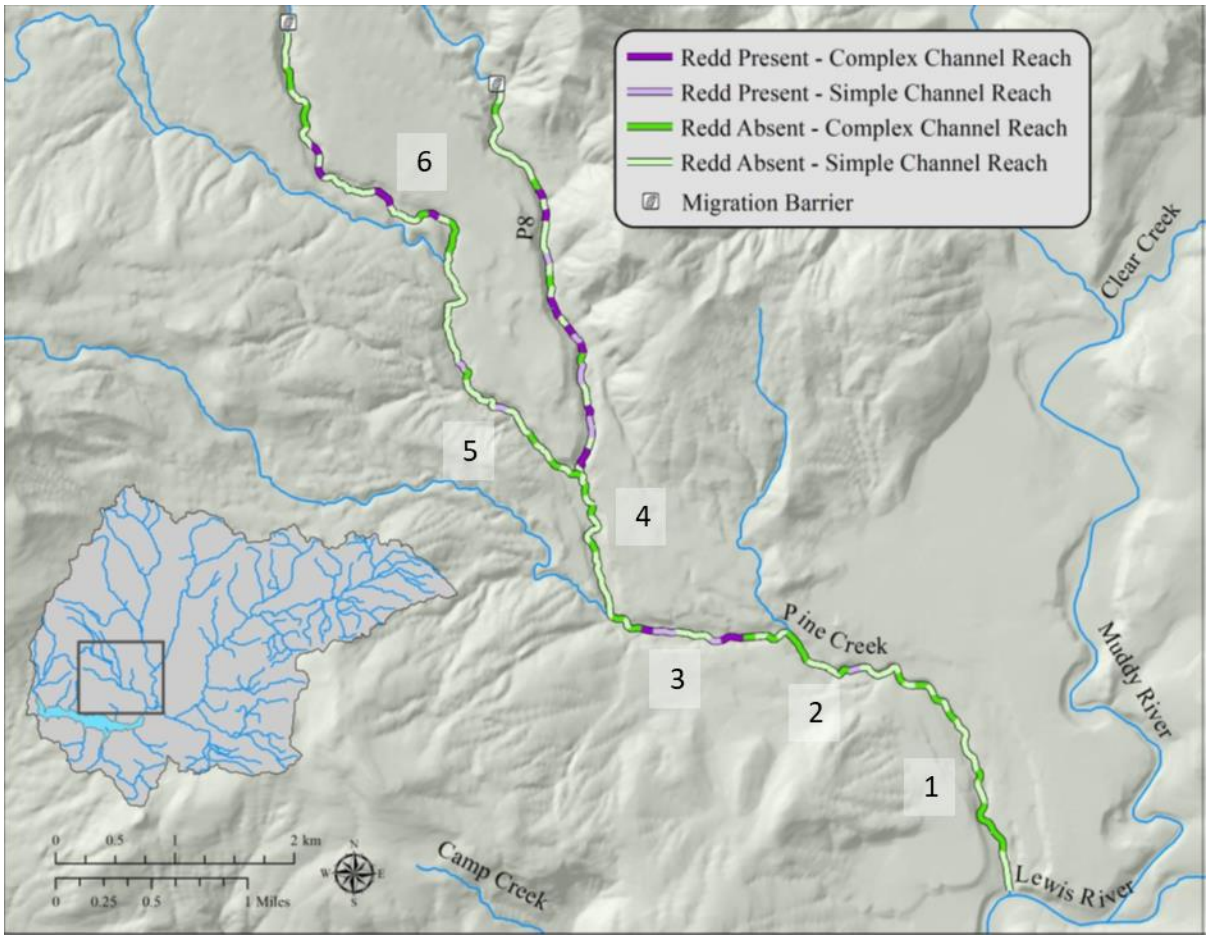



*Figure 2. Map showing 100 m reaches by levels of Bull Trout redd occurrence and channel complexity in the Pine Creek basin, WA, from the Lewis River Bull Trout Habitat Restoration Project Identification Assessment (Lamperth et al. 2017).*

# 7 TASKS

To meet the project objectives, we will complete the following tasks, which are described in more detail in the Methods section below.

***Task 1: Site investigation and baseline assessment***

This task will include a kickoff meeting with PacifiCorp staff, the ACC and project partners; a review of existing data; a geomorphic field investigation and site survey; a riparian and geomorphic assessment; an assessment of hydrology; and development of a hydraulic model.

***Task 2: Design***

**2.1: Alternatives analysis and concept design – 15% design**

We will develop a conceptual design including up to three (3) alternatives and/or a priority tiered instream habitat approach informed by data collected in Task 1. We will submit the 15% design to PacifiCorp staff and ACC for review and discuss comments and questions via a virtual meeting.

**2.1: Draft construction plan – 30% design**

We will incorporate the comments on the 15% conceptual design and alternatives analysis into the 30% basis of design report and plan sheets.

**2.3: Permit ready designs – 60-80% design**

We will incorporate the comments from the 30% draft construction design plans into the 60-80% basis of design report and plan sheets. We will also begin the permitting process.

**2.4: Final construction plan – 95-100% design**

Comments from the 80% design plans will be incorporated into the 95-100% final construction plan design report and plan sheets. We will submit design drawings that will be consistent with the Washington State Recreation and Conservation Office Manual 18 guidelines and will reflect all required regulatory conditions needed to facilitate permitting, contracting, and the bid process. If construction funding is secured, design will be progressed to 100%. If construction funding is not secured, the design will be progressed to 95% to allow for modifications pending construction fund acquisition.

***Task 3: Monitoring and photo documentation***

We will provide photo documentation of habitat conditions at the project site before, during and after project completion.

***Task 4: Project management and coordination***

This task will include time and resources for internal project management among the design team and coordination with stakeholders to complete the project. We will facilitate a project kick-off meeting with the design team, PacifiCorp, the ACC, and interested stakeholders prior to beginning the project. Creating project update memos to be submitted with invoices will also fall under this task. The design team will also participate in a final site visit to close out the project.

# 8 METHODS

The goal of this project is to work with Columbia Land Trust to develop a comprehensive watershed assessment and restoration design for suitable areas in Reach 1-6 of Pine Creek (from upstream of private land in Reach 1 to the migration barrier [approximately 11km]) that aims to increase channel complexity and create instream habitat by facilitating pool formation, creating cover, and restoring natural fluvial and riparian processes. The design is intended to integrate forest management practices with design elements to improve habitat in the short term as well as provide long term resiliency, incorporating the unique characteristics of this dynamic system. We will assess the hydrologic, geomorphic, hydraulic, habitat, and watershed process characteristics of the project site to develop alternatives and conceptual designs centered on process-based restoration principles that address limiting factors (e.g., Beechie et al. 2010; Roni and Beechie 2013). Instream habitat improvement design will be driven by results from an initial watershed assessment that we will conduct to identify areas where Bull Trout redd density and channel complexity are low. In our assessment, we will leverage data from the *Lewis River Project – Limiting Factors and Identification of Restoration Alternatives to Fish Passage* (Roni and Timm 2016) as well as previous and ongoing habitat and spawner surveys (e.g., Lamperth et al. 2017, PacifiCorp unpublished). For those reaches with simple habitat, we will then develop conceptual plans (15%) through draft construction (30%), permit-ready (60-80%), and final construction plans (100%).

The following tasks detail the methods we propose to complete a holistic habitat restoration design that complements Columbia Land Trusts' management plan and BMPs for their Mount St. Helens Stewardship Area. We will begin the project by assessing geomorphic, hydrologic, and hydraulic conditions within the project area to evaluate site conditions. These analyses will allow us to determine appropriate restoration strategies, high-quality areas to avoid or protect, and low-quality areas where treatments should be focused. We will use results from the site investigation and assessment to develop and analyze design alternatives before advancing to a conceptual design. However, because site access is limited and to avoid damaging the recovering forests and riparian areas, we anticipate the most suitable treatment will be large wood additions through helicopter placement[1] and possibly some low impact riparian treatments. Through wood additions, we expect short-term habitat responses in the form of local sediment erosion and deposition that creates predictable locations of pools and bars. Increasing hydraulic variability will also improve sediment sorting, allowing distinct and clean patches of spawning gravel to form near the structures. The expected long-term habitat responses include increased floodplain access, sediment retention, water retention, stabilization of fluvial features, and overall increased habitat complexity. Although Pine Creek is a relatively high-gradient and high-energy system, there are several floodplain pockets that can be engaged to reduce stream power and create reaches with lower gradient and higher potential for sediment and water storage. Other direct benefits of large wood additions for limiting factors and fish include increased cover from high water velocities and predation, more and deeper pools, sediment sorting for improved spawning grounds for adult salmonids and winter concealment opportunities for juvenile salmonids, and an increase in areas with high suitability for rearing. Large wood jams can also help stabilize and protect existing and developing floodplain pockets to allow a mature conifer canopy to develop in the riparian area.

[1] We recognize that previous large wood placement efforts using traditional bank attached log structures in lower Pine Creek and Clear Creek have not been successful, which is consistent with what we have seen in other basins. Any wood designs using wood placement will focus on using appropriate methods that mimic natural wood in similar channel types.

Overall, implementing an appropriate treatment within Pine Creek will kick-start the recovery of instream fluvial processes while the uplands in the Pine Creek watershed continue to recover.

## 8.1 TASK 1: SITE INVESTIGATION AND BASELINE ASSESSMENT

***Subtask 1.1 Existing data review***

Existing data (e.g., water quality, fish habitat, streamflow gages, previous reports, GIS data, etc.) will be compiled, reviewed, and analyzed for applicability to the project. We will also identify critical data gaps and develop a plan to fill data gaps. This task will be completed efficiently owing to prior data review during the *Lewis River Project – Limiting Factors and Identification of Restoration Alternatives to Fish Passage* (Roni and Timm 2016). It is expected that additional data sources will be utilized that are more site-specific and/or related to instream habitat design.

***Subtask 1.2 Site survey and geomorphic field assessment***

The site survey will supplement existing LiDAR topography (QSI 2018) by conducting a bathymetric river survey where LiDAR did not penetrate the water surface or where conditions have changed significantly since 2018, as well as a survey of road crossings, geomorphic and hydraulic features, and areas of interest required for design. An up-to-date topobathymetric surface is critical for designing functional process-based instream habitat features, defining project risks, assessing floodplain/floodway impacts, and meeting environmental compliance and permit requirements. Given the remote nature and satellite coverage of the project site, it is anticipated that this survey will be comprised of cross sectional and longitudinal survey confined to the active channel adequate for supporting a one-dimensional (1D) hydraulic model.

The site survey will also establish survey controls for design and construction. The survey will be completed using a survey-grade real-time kinematic (RTK) global positioning system (GPS) unit and/or a survey-grade total station. Survey data will be sent to the Online Positioning User Service (OPUS) for post-processing and conversion to the preferred coordinate system (North American Datum (NAD) 83, Washington State Plane, South Zone, horizontal projection), and to the North American Vertical Datum (NAVD) 88, using international survey feet as the vertical projection. Survey data will be merged with LiDAR to create a composite surface for analysis and design. The geomorphic field investigation will occur concurrently with site survey and include geomorphic unit delineation, large wood survey, substrate survey, channel and valley condition assessment, and bank conditions/erodibility and avulsion assessment for the entire project site. We will cater the field investigation to the specific limiting factors, known impacts, geomorphic and hydrologic setting (Roni and Beechie 2013), and desired project outcomes. We will develop or refine a tailor-made rapid assessment survey and implement it through a custom tablet app to increase efficiency.

***Subtask 1.3 Geomorphic and riparian assessment***

The geomorphic and riparian assessment will incorporate existing data, field survey data, and hydrologic and hydraulic outputs to assess the geomorphic and riparian condition of the project site, identify reach-specific limiting factors, and applicability of instream habitat designs and any riparian treatments. We will begin our geomorphic assessment by evaluating existing remote sensing and GIS data to characterize the reach and assess landscape-scale parameters that affect fluvial processes. We will then validate our spatial analysis and fill remaining data gaps using a tailor-made rapid assessment survey. Our field survey will be supported by custom tablet apps modified to fit the specific needs of Pine Creek and this project. The assessment will also include a synthesis of historic changes, geomorphic trajectory, limiting or driving factors, and project implications by reach. We will develop a relative elevation model (REM) to identify flood channels and characterize floodplain connectivity to support a holistic restoration design. The geomorphic assessment will analyze the Beechie and Imaki (2014) channel type, WDFW habitat, and PacifiCorp spawner survey data to determine appropriate instream

habitat methodologies based on the relevant habitat-forming processes, as well as existing redd locations. In our experience, pre-existing large-scale reach classification products require validation and are often not readily usable off the shelf. The riparian assessment will determine appropriate methodologies and assess post-disturbance riparian condition and trajectory. We intend to implement our own reach characterization framework, but products such as Beechie and Imaki (2014) are useful as additional lines of evidence and the input parameters are valid, which allows for some cost savings by eliminating the need recalculate several metrics. Doing so will ensure that our recommended restoration actions and subsequent designs do not impact current spawning areas, are appropriate and sustainable for these reaches, and any propagated downstream effects are accounted for.

***Subtask 1.4 Hydrologic assessment***

We will complete a site-specific hydrologic assessment for the project. Recurrence interval flows based on the United States Geological Survey (USGS) Gage 14216800 Pine Creek near Cougar, WA, and Gage 14216900 Pine Creek at mouth near Cougar, WA will be analyzed utilizing USGS Bulletin 17C flow frequency analysis (England et al. 2019; Mastin et al. 2016). Additional streamflow statistics relevant to aquatic habitat and watershed processes will also be determined to assure that the instream habitat design is impactful at flows relevant for aquatic organisms and natural processes (Granato et al. 2017). Results from the hydrologic analysis will provide the inflow information for the hydraulic model. The hydrologic assessment will also include projections for climate change and resulting project implications (Beechie et al. 2012). We will include a specific hydrologic assessment evaluating the influence of post-eruption hydrologic conditions and incorporate watershed trajectory into the proposed design (Major and Mark 2006).

***Subtask 1.5 Hydraulic analysis***

We will develop a 1D hydraulic model to assess hydraulic characteristics, analyze existing and proposed conditions, support the geomorphic assessment, and analyze project risks. The hydraulic model will utilize inputs developed in Task 1 (e.g., topography, inflow, substrate, and cover) to compute hydraulic outputs such as depth, velocity, shear stress, and water surface elevation. The hydraulic model will include a specific assessment analyzing the influence of post-eruption conditions including a risk assessment of debris flows and incorporation of watershed conditions trajectory on hydraulic conditions. Hydraulic model results will be computed at typical recurrence intervals (bankfull-, 2-, 5-, 10-, 25-, 50-, and 100-year) as well as at flows significant to aquatic organisms and climate change projected flows. Model outputs are critical to understanding flood risks, floodplain activation, watershed processes, bank stability, sediment mobilization, wood stability analyses, and determining appropriate wood size, number, and location. We will validate the input parameters and results of the hydraulic model using remote sensing and field surveys. The project location is not within a regulated floodway/floodplain; however, county requirements can be more stringent than FEMA regulations. If required, we will work with PacifiCorp to identify a successful solution to FEMA or county floodplain/floodway regulations, potentially including a conditional letter of map revision/letter of map revision (CLOMR/LOMR) or no-rise assessment (beyond the scope of this proposal, would be budgeted on a per-task basis, if needed).

## 8.2 TASK 2: DESIGN

***Subtask 2.1 Alternatives analysis and concept design – 15% design***

We will develop a conceptual design including up to three (3) alternatives and/or a priority tiered instream habitat and riparian approach informed by data collected in Task 1. We focus on a fish-centric, science-driven approach to river restoration, bringing together biological and physical habitat features relevant to the needs of aquatic organisms and fluvial processes. It is anticipated that the conceptual designs will include a wide variety of restoration techniques and construction methodologies ranging from low impact processed based restoration to

engineered log jams. Alternatives are likely to consist of differing restoration methodologies, reaches, treatment densities, and/or tiers to address limiting factors. The alternatives deliverable will consist of three (3) alternatives for the entire selected project area, separated out by reach. Alternative analysis will take into account stakeholder feedback, funding, and other factors to determine the appropriate components to move forward with in the design process. Following stakeholder engagement, project components may be separated into reaches for a phased approach, as needed. The proposed conceptual alternatives will consider their ability to ameliorate climate change (Chandler 2016; Beechie et al. 2012) and improve water quality (WDOE 2016) as well as key components identified in Task 1. The conceptual design for the riverine system will be developed to incorporate forest management plans and BMPs from *Mount St. Helens Stewardship Area Management Plan 2013-2022* (CLT 2013). AutoCAD will be used to combine LiDAR and survey data, along with spatial data layers to create base maps for the conceptual designs. Design drawings will be consistent with RCO Manual 18 Design and Restoration Project guidelines and reflect all required regulatory conditions needed to facilitate permitting, contracting, and the bid process.

The conceptual basis of design report and plan sheets will be submitted to PacifiCorp and ACC staff for review. We will organize a virtual meeting with PacifiCorp and the ACC to discuss the comments and provide any clarification needed on responses.

***Subtask 2.2 Draft construction plan – 30% design***

We will incorporate the comments on the 15% conceptual design and alternatives analysis into the 30% basis of design report and plan sheets. It is anticipated that major design element may change at this time. The preferred alternative will be selected at this time. Draft construction 30% plan sheets will be developed for the selected alternative and will likely include additional detail and analysis from the 15% design but may not include all the components of the final drawing package. The drawings will contain explicit type, size, and location information for design elements the entire project area, separated by reach. Additionally, the hydraulic model will be updated to reflect the proposed conditions and preliminary ELJ stability calculations will be completed as well as identification of project risks. The draft construction basis of design report and plan sheets will be submitted to PacifiCorp and the ACC for review.

***Subtask 2.2. Permit ready designs - 60-80% design***

We will incorporate the comments on the 30% draft construction design plans into the 60-80% basis of design report and plan sheets. It is anticipated that minor design elements may change at this time. Permit ready 60-80% plan sheets are likely to include all the components of the final drawing package. Additionally, the 60-80% design package will include quantities and construction cost estimates based on bid tabulations from recently constructed projects in a similar location as well as tabulations developed by other agencies. The hydraulic model will be updated to reflect changes in the design plans and ELJ stability will be assessed. Quantities, areas of impact, and other information required for environmental compliance and permitting will also be determined at this stage.

***Subtask 2.3 Environmental compliance and permitting***

All regulatory information needed to facilitate environmental compliance and permitting will be provided by CFS with assistance from the Columbia Land Trust. As the preliminary designs are being developed, we will begin developing the permit applications. The permitting process will begin by submitting a Joint Aquatic Resources Permit Application (JARPA) to relevant local, state, and federal agencies for review. At a minimum, we expect this project will require a Hydraulic Project Approval (HPA) from the WDFW, a 401 Water Quality Certification from the Washington Department of Ecology, an aquatic land use authorization from WADNR, and a County Shoreline Permit. Through the JARPA, we will apply for the Fish Habitat Enhancement Exemption which would expedite the permit process for the HPA, Shoreline Permit, and potentially the State Environmental Policy Act consultation, if

a review is triggered. For any work occurring on USFS property, a NEPA consultation may be required unless the proposed actions fall under an existing programmatic. We do not expect a Section 404 or Section 10 permit from the Army Corps of Engineers will be required; however, that will be at the discretion of the Corps permitting representative. The deliverable for this task will consist of draft permit application documents.

***Subtask 2.4 Final construction plan – 95-100% design***

Comments on the 80% design plans will be incorporated into the 95-100% design final construction plan design report and plan sheets. If construction funding is secured prior to completion of this proposal, the project will be progressed to 100% final design. If construction funding is not anticipated or secured at this time, the design will be progressed to 95% to allow for modification prior to beginning the construction bid process. It is anticipated and typical that minor design element may change at this time. The final construction 95-100% design will be a bid-ready package that will include final plans, specifications, quantities, construction cost estimates, updated permits , contracting, and the bid process. The drawings will be finalized with the seal and stamp of the designer(s) and delivered in digital format to PacifiCorp. If requested, a scope for construction support can be developed. Key elements of this project are anticipated to include large wood installations, riparian planting, and possibly low-tech process-based restoration (LTPBR) techniques. These elements can be subject to interpretation and/or vary based on construction conditions. Having the engineer of record on-site during construction is beneficial for efficiency and project success.

***Subtask 2.5 Submit final design plan set and basis of design documents***

Design drawings will be consistent with the Washington State Recreation and Conservation Office Manual 18 guidelines and will reflect all required regulatory conditions needed to facilitate permitting, contracting, and the bid process.

## 8.3 Task 3: Monitoring and Photo Documentation

As per the National Marine Fisheries Service's Biological Opinion for Relicensing of the Lewis River Hydroelectric Projects, we will provide photo documentation of habitat conditions at the project site before, during, and after project completion. We will include general views and close-ups showing details of the project and project area, including pre- and post-construction. We will label each photo with the date, time, project name, photographer's name, and documentation of the subject activity. Photo points will be collected using a GIS app so that the point can be easily relocated, and the photo reproduced in subsequent years. The timing of photo collection is shown in the table below. Only pre-construction monitoring and photo documentation will be completed as part of this contract. As-built, and post-construction photo documentation and monitoring will be done as part of construction, which is not part of this proposal.

| Photo | Timing |
|---|---|
| **1** | Pre-construction |
| **2** | Post-construction as-built |
| **3** | Post one high flow |
| **4** | 3 years after construction |
| **5** | 5 years after construction |

In addition, we will outline a detailed effectiveness monitoring plan based on previous effectiveness monitoring we designed for the Lewis River, western Washington, and the Columbia River Basin (Roni et al. 2020a,b; 2022). This leverages pilot studies we have under way using the latest remote sensing techniques to efficiently monitor floodplain, riparian, and large wood projects. These studies not only monitor the project's overall physical and

biological effectiveness, but also evaluate specific design elements to assist with adaptive management, if needed. Based on the methods outlined in the monitoring plan we will collect required pre-project data during the design phase. This typically includes pre-project topo-bathymetric surveys, habitat surveys, and habitat suitability modeling. In addition, the long-term redd surveys will serve as additional biological monitoring of project success.

### 8.4 Task 4: Project Management and Coordination

***Kickoff meeting***

At the onset of the project, we will organize a virtual kickoff meeting with Aquatic Fund Subgroup to the Aquatic Coordination Committee (ACC) and other project partners to introduce the consultant team, clearly define goals, methods, expectations, communication, schedule, and the project management process. Time will be allotted to discuss any questions or concerns.

***Project management and coordination***

This task will include time and resources for internal project management among the design team and coordination with stakeholders to complete the project. Creating project update memos to be submitted with invoices will also fall under this task. The design team will also participate in a final site visit to close out the project.

## 9 Specific Work Products

***Task 1: Site investigation and baseline assessment:***

- Draft and Final existing conditions sections of the basis of design report detailing all elements of Task 1
- Package of maps, spatial data, and analysis developed in Task 1
- Hydraulic model with outputs at all analyzed recurrence intervals

***Task 2.1: Alternatives analysis and concept design – 15% design:***

- Conceptual basis of design report
- Conceptual design plan sheets for up to three (3) alternatives
- Meeting notes for conceptual design comment response meeting

***Task 2.2: Draft construction plan – 30% design:***

- 30% basis of design report
- 30% design plan sheets

***Task 2.3: Permit ready designs – 60-80% design:***

- 60-80% basis of design report
- 60-80% design plan sheets, specifications, and cost estimates
- Submittal of completed permit applications

***Task 2.4: Final construction plan – 95-100% design:***

- Final 95-100% basis of design report
- Final 95-100% design plan sheets, specifications, and cost estimates
- Final 95-100% proposed condition hydraulic model

***Task 3: Monitoring and photo documentation:***

- Effectiveness monitoring plan
- Pre-project effectiveness monitoring data collection and brief report with photos and descriptions

- Shapefiles and/or KMZ files of photo points with retained images

***Task 4: Project management and coordination***

- Status update memo with the submission of the project invoices (provided throughout the life of the project).

# 10 PROJECT DURATION

This will be an approximately one and a half-year design project, beginning in May 2023 and ending in October 2024, which will allow construction to occur during the 2025 fish window, if funding is available. A detailed schedule for each task and deliverable is provided below. This schedule assumes a six-month turnaround period for relevant permits.

| Task/Deliverable | Schedule |
|---|---|
| **Project initiation** | 5/1/2023 |
| **Project management** | 5/1/2023 – 5/30/2024 |
| **Project kick-off meeting** | 5/5/2023 |
| **Task 1: Site investigation and baseline assessment** | 5/5/2023 – 8/1/2023 |
| Existing data review | 5/5/2023 – 5/15/2023 |
| Geomorphic field investigation and site survey | 5/15/2023 – 6/1/2023 |
| Hydrologic, hydraulic, and geomorphic assessment | 6/1/2023 – 8/1/2023 |
| Submit Deliverables for Task 1 | 8/1/2023 |
| **Task 2: Design** | 8/1/2023 – 5/30/2024 |
| **Task 2.1: Alternatives analysis and concept design – 15% design** | 8/1/2023 – 11/1/2023 |
| Develop concept design and alternatives analysis | 8/1/2023 – 9/1/2023 |
| Meeting notes for conceptual design review meeting with PacifiCorp and the ACC | 9/1/2023 |
| Revise conceptual design and submit preferred alternative package | 10/1/2023 |
| 30-day PacifiCorp and ACC review period | 10/1/2023 – 11/1/2023 |
| **Task 2.2: Draft construction plan – 30% design** | 11/1/2023 – 1/1/2024 |
| Address 15% design review comments | 11/1/2023 – 12/1/2023 |
| Submit 30% basis of design report and plan sheets | 12/1/2023 |
| 30-day PacifiCorp and ACC review period | 12/1/2023 - 1/1/2024 |
| **Task 2.3: Permit ready designs – 60-80% design** | 1/1/2024 – 3/1/2024 |
| Address 30% design review comments | 1/1/2024 – 2/1/2024 |
| Design confirmation field visit | 1/1/2024 |
| Submit 60-80% basis of design report, plan sheets, specifications, and cost estimate | 2/1/2024 |
| Submit permits | 1/1/2024 – 2/1/2024 |

| | |
|---|---|
| 30-day PacifiCorp and ACC review period | 2/1/2024 – 3/1/2024 |
| **Task 2.4: Final construction plan – 95-100% design** | 3/1/2024 – 10/30/2024 |
| Permits approved | 8/1/2024 |
| Address 60-80% design review comments | 3/1/2024 – 10/30/2024 |
| Submit 95-100% bid ready design package | 10/30/2024 |
| Project close-out site visit (with PacifiCorp, Cowlitz PUD, and ACC representatives) | 10/30/2024 |
| **Task 3: Monitoring and photo documentation** | |
| Develop monitoring plan | 5/30/2024 – 10/30/2024 |
| Pre-Construction | 10/30/2024 |
| During Construction | Included in construction phase budget |
| Post-Construction | Included in construction phase budget |

# 11 Permits and Authorizations

All regulatory information needed to facilitate environmental compliance and permitting will be provided by CFS with assistance from Columbia Land Trust. As the preliminary designs are being developed, we will begin developing the permit applications. The permitting process will begin by submitting a Joint Aquatic Resources Permit Application (JARPA) to relevant local, state, and federal agencies for review. At a minimum, we expect this project will require a Hydraulic Project Approval (HPA) from the WDFW, a 401 Water Quality Certification from the Washington Department of Ecology, an aquatic land use authorization from WADNR, and a County Shoreline Permit. Through the JARPA, we will apply for the Fish Habitat Enhancement Exemption which would expedite the permit process for the HPA, Shoreline Permit, and potentially the State Environmental Policy Act consultation, if a review is triggered. For any work occurring on USFS property, a NEPA consultation may be required unless the proposed actions fall under an existing programmatic. We do not expect a Section 404 or Section 10 permit from the Army Corps of Engineers will be required; however, that will be at the discretion of the Corps representative.

We have successfully obtained these permits for many large wood addition, fish passage, and river restoration projects in Washington State in a timely manner. Our preferred approach is to contact regulatory agencies early within a project's timeline to get them involved and help identify potential hurdles or constraints. Identifying concerns early allows us and our partners to address issues and incorporate solutions in the planning and design phases of a project. In our experience, regulatory agencies can be a strong supporter and ally if they feel engaged in the project.

Columbia Land Trust is the owner of the land used for access to the project site as well as a collaborator in the project. We have included the Landowner Acknowledgement Form as Attachment A.

# 12 Matching Funds and In-kind Contributions

We are in discussion with stakeholders and project partners regarding matching funds and in-kind contributions.

# 13 BUDGET

## 13.1 ESTIMATED BUDGET

Cramer Fish Sciences will work with PacifiCorp to meet all project objectives on schedule and on budget. We estimate the total cost of the project to be $214,236. Budget assumptions are discussed in the section below and budget details are shown in the following table.

## 13.2 BUDGET ASSUMPTIONS

We developed this budget under the following assumptions:

- The available LiDAR is adequate to complete the design with the addition of a targeted field-based topographic survey to account for recent channel migration and bathymetry. We assume LiDAR adheres to Washington State Department of Natural Resources Lidar Acquisition Technical Specifications and USGS Lidar Base Specifications 1.3 including survey control standards, vertical and horizontal accuracy standards, metadata standards, tiling schemes, and naming conventions, and accurately represents existing non-submerged topography.
- We assume that the topographic survey will be completed during wadable conditions.
- The selected design alternative(s) will focus on large wood additions.
- Additional collaboration, site-visits, meetings, or tasks beyond the scope of this proposal would be budgeted on a per-task basis, as needed.
- This proposal assumes that construction funding will be secured independently from this proposal. This proposal does not include construction funding solicitation. If construction funding is not secured, the design will be progressed to 95%, including draft permit documents, until funding is secured. When construction funding is secured, a scope can be developed to progress the design to a 100% bid ready package, submit permit applications, and provide construction oversight. It is anticipated that the most likely construction funding source would be the Lewis River Aquatic Resource Project Fund.

This proposal and budget are for assessment and design and cost estimates for construction for each priority reach will be provided. While it is difficult to estimate construction costs prior to doing assessment, site visits, and preliminary designs, we have cost estimates for similar projects that utilized helicopter wood placement. It is anticipated that the upper portion of reach 1 (~0.62 mi), reach 2 (~0.75 mi), reach 4 (~0.8 mi), and reach 5 (~1.86 mi) will be the priority reaches for design (~4 river miles total). Construction cost for these priority reaches could range from $150,000 to $800,000 per river mile or a total of $600,000 to $3.2 million for all 4 miles)[2]. It should be noted that this assumes the entirety of each reach will be treated and that all reaches will be treated, which is unlikely. Thus, costs are likely to be lower and these estimates were provided to give ballpark estimates as requested by the ACC.

[2] See also response to comments.

| | Projected Hours | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CRAMER FISH SCIENCES An Employee Owned Consulting Company | Phil Roni $250 | Reid Camp $172 | Philip Luecking $204 | Tyler Rockhill $163 | Technical Writer $141 | Biologist $115 | Bio Technician $71 | Columbia Land Trust $100 | Labor Subtotal | Expenses | | |
| | | | | | | | | | | Equipment | Travel | Totals |
| **Objective 1: Site investigation and baseline assessment** | | | | | | | | | | | | |
| *Task 1.1 Exisiting data review* | 4 | 16 | 0 | 16 | 0 | 16 | 16 | 8 | $10,136 | | | $10,136 |
| *Task 1.2 Geomorphic field investigation and site survey* | 4 | 24 | 0 | 24 | 0 | 80 | 80 | 12 | $25,120 | $3,000 | $5,000 | $33,120 |
| *Task 1.3 Geomorphic and riparian assessment* | 4 | 40 | 0 | 10 | 0 | 0 | 40 | 24 | $14,750 | | | $14,750 |
| *Task 1.4 Hydrologic assessment* | 0 | 0 | 8 | 20 | 0 | 0 | 10 | 0 | $5,602 | | | $5,602 |
| *Task 1.5 Hydraulic anlaysis* | 0 | 0 | 8 | 60 | 0 | 0 | 0 | 0 | $11,412 | | | $11,412 |
| Objective 1 Subtotal | 12 | 80 | 16 | 130 | 0 | 96 | 146 | 44 | $67,020 | $3,000 | $5,000 | $75,020 |
| **Objective 2: Design** | | | | | | | | | | | | |
| *Task 2.1 Alternatives analysis and concept design – 15% design* | 8 | 16 | 16 | 60 | 6 | 4 | 8 | 12 | $20,870 | | | $20,870 |
| *Task 2.2 Draft construction plan – 30% design* | 8 | 16 | 12 | 60 | 6 | 4 | 8 | 12 | $20,054 | | | $20,054 |
| *Task 2.3 Permit ready design – 60-80% design* | 8 | 24 | 12 | 70 | 6 | 4 | 8 | 10 | $22,860 | $1,000 | $1,500 | $25,360 |
| *Task 2.4 Final construction plan – 100% design* | 4 | 8 | 12 | 40 | 6 | 4 | 8 | 10 | $14,218 | | | $14,218 |
| *Task 2.5 Permitting* | 0 | 16 | 0 | 8 | 6 | 4 | 8 | 8 | $6,730 | | | $6,730 |
| Objective 2 Subtotal | 28 | 80 | 52 | 238 | 30 | 20 | 40 | 52 | $84,732 | $1,000 | $1,500 | $87,232 |
| **Objective 3: Monitoring and photo documentation** | | | | | | | | | | | | |
| *Task 3.1 Monitoring plan development* | 8 | 6 | 0 | 6 | 0 | 4 | 0 | 8 | $5,270 | $1,000 | $750 | $7,020 |
| *Task 3.2 Pre-construction photo documentation* | 0 | 0 | 0 | 0 | 0 | 12 | 12 | 12 | $3,432 | $1,000 | $750 | $5,182 |
| Objective 3 Subtotal | 8 | 6 | 0 | 6 | 0 | 16 | 12 | 20 | $8,702 | $2,000 | $1,500 | $12,202 |
| *Project management* | 40 | 24 | 4 | 24 | 0 | 0 | 0 | 20 | $20,856 | | | $20,856 |
| *Project kickoff meeting* | 8 | 8 | 4 | 8 | 0 | 0 | 0 | 4 | $5,896 | | | $5,896 |
| *Update memos (provided with invoices)* | 8 | 8 | 0 | 8 | 0 | 0 | 0 | 0 | $4,680 | | | $4,680 |
| *Project close-out site visit* | 10 | 10 | 0 | 10 | 0 | 0 | 0 | 10 | $6,850 | | $1,500 | $8,350 |
| Objective 4 Subtotal | 66 | 50 | 8 | 50 | 0 | 0 | 0 | 34 | $38,282 | $0 | $1,500 | $39,782 |
| Total Project Hours | 114 | 216 | 76 | 424 | 30 | 132 | 198 | 150 | | | | |
| Total Project Costs | $28,500 | $37,152 | $15,504 | $69,112 | $4,230 | $15,180 | $14,058 | $15,000 | $198,736 | $6,000 | $9,500 | $214,236 |

# 14 PHOTO DOCUMENTATION

As per the National Marine Fisheries Service's Biological Opinion for Relicensing of the Lewis River Hydroelectric Projects, we will provide photo documentation of habitat conditions at the project site before, during, and after project completion. We will include general views and close-ups showing details of the project and project area, including pre- and post-construction. We will label each photo with the date, time, project name, photographer's name, and documentation of the subject activity. The timing of photo collection is shown in the table below. As part of this contract, we will complete the pre-construction photo documentation. During and after photo documentation will be conducted when the project is implemented, and therefore, will be part of another contract.

| Photo | Timing |
|---|---|
| **1** | Pre-construction |
| **2** | Post-construction as-built |
| **3** | Post one high flow |
| **4** | 3 years after construction |
| **5** | 5 years after construction |

# 15 INSURANCE

ACORD®

## CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 6/17/2022

**THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.**

**IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).**

| | |
|---|---|
| PRODUCER<br>Brightline Insurance Services, LLC<br>15305 Dallas Pkwy, Suite 100<br>Addison TX 75001 | CONTACT NAME: John Munson<br>PHONE (A/C, No, Ext): 312-420-0747 FAX (A/C, No):<br>E-MAIL ADDRESS: jmunson@brightlineinsurance.com |
| INSURED<br>S.P. Cramer & Associates, Inc.dba Cramer Fish Sciences<br>7525 NE Ambassador Pl., Suite C<br>Portland OR 97220 | INSURER(S) AFFORDING COVERAGE — NAIC #<br>INSURER A : TRAVELERS IND CO — 25658<br>INSURER B : TRAVELERS CAS INS CO OF AMER — 19046<br>INSURER C : Travelers Property Casualty Co of Amer — 25674<br>INSURER D : TRAVELERS CAS & SURETY CO — 19038<br>INSURER E : ATLANTIC SPECIALTY INS CO — 27154<br>INSURER F : |

**COVERAGES** **CERTIFICATE NUMBER:** 547138220 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

| INSR LTR | TYPE OF INSURANCE | ADDL INSD | SUBR WVD | POLICY NUMBER | POLICY EFF (MM/DD/YYYY) | POLICY EXP (MM/DD/YYYY) | LIMITS | |
|---|---|---|---|---|---|---|---|---|
| A<br>A | X COMMERCIAL GENERAL LIABILITY<br>CLAIMS-MADE X OCCUR<br>GEN'L AGGREGATE LIMIT APPLIES PER:<br>X POLICY PRO-JECT LOC<br>OTHER: | Y | Y | 680-4T947828-22-42<br>680-4T947017-22-42 | 6/18/2022<br>6/18/2022 | 6/18/2023<br>6/18/2023 | EACH OCCURRENCE<br>DAMAGE TO RENTED PREMISES (Ea occurrence)<br>MED EXP (Any one person)<br>PERSONAL & ADV INJURY<br>GENERAL AGGREGATE<br>PRODUCTS - COMP/OP AGG | $ 2,000,000<br>$ 300,000<br>$ 5,000<br>$ 2,000,000<br>$ 4,000,000<br>$ 4,000,000 |
| B | AUTOMOBILE LIABILITY<br>X ANY AUTO<br>OWNED AUTOS ONLY<br>HIRED AUTOS ONLY<br>SCHEDULED AUTOS<br>NON-OWNED AUTOS ONLY | Y | Y | BA-4T948284-22-42-G | 6/18/2022 | 6/18/2023 | COMBINED SINGLE LIMIT (Ea accident)<br>BODILY INJURY (Per person)<br>BODILY INJURY (Per accident)<br>PROPERTY DAMAGE (Per accident) | $ 1,000,000<br>$<br>$<br>$ |
| C | X UMBRELLA LIAB X OCCUR<br>EXCESS LIAB CLAIMS-MADE<br>DED X RETENTION $ 0 | Y | Y | CUP-4T948524-22-42 | 6/18/2022 | 6/18/2023 | EACH OCCURRENCE<br>AGGREGATE | $ 2,000,000<br>$ 2,000,000 |
| D<br>D | WORKERS COMPENSATION AND EMPLOYERS' LIABILITY<br>ANYPROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y/N: N<br>If yes, describe under DESCRIPTION OF OPERATIONS below | N / A | Y | UB-4T948444-22-42-G<br>UB-4T948376-22-42-G | 6/18/2022<br>6/18/2022 | 6/18/2023<br>6/18/2023 | X PER STATUTE OTH-ER<br>E.L. EACH ACCIDENT<br>E.L. DISEASE - EA EMPLOYEE<br>E.L. DISEASE - POLICY LIMIT | <br>$ 1,000,000<br>$ 1,000,000<br>$ 1,000,000 |
| E<br>D | Watercraft Liability<br>Misc. Professional Liability | Y<br>Y | | B5JH32181<br>107654925 | 6/18/2022<br>6/18/2022 | 6/18/2023<br>6/18/2023 | Each Occurrence Limit<br>Each Claim/ Aggregate | 1,000,000<br>2,000,000 |

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
All covered operations of the named insured subject to policy conditions, limitations and exclusions.

**CERTIFICATE HOLDER**

For Informational Purposes

**CANCELLATION**

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

© 1988-2015 ACORD CORPORATION. All rights reserved.

ACORD 25 (2016/03) The ACORD name and logo are registered marks of ACORD

# 16 LITERATURE CITED

Beechie, T., and H. Imaki. 2014. Predicting natural channel patterns based on landscape and geomorphic controls in the Columbia River basin, USA. Water Resources Research 50(1):39–57.

Beechie, T., H. Imaki, J. Greene, A. Wade, H. Wu, G. Pess, P. Roni, J. Kimball, J. Stanford, P. Kiffney, and N. Mantua. 2012. Restoring salmon habitat for a changing climate. River Research and Applications 29: 939-960.

Beechie, T. J., D. A. Sear, J. D. Olden, G. R. Pess, J. M. Buffington, H. Moir, P. Roni, and M. M. Pollock. 2010. Process-based principles for restoring river ecosystems. BioScience 60(3):209-222.

Chandler, G. L., S. P. Wollrab, D. L. Horan, D. E. Nagel, S. L. Parkes, D. J. Isaak, D. L. Horan, S. J. Wenger, E. E. Peterson, J. M. Ver Hoef, S. W. Hostetler, C. H. Luce, J. B. Dunham, J. L. Kershner, and B. B. Roper. 2016. NorWeST stream temperature data summaries for the western U.S. Fort Collins, CO: Forest Service Research Data Archive. Available online at: https://doi.org/10.2737/RDS-2016-0032.

Columbia Land Trust (CLT), and MB&G. 2013. Mount St. Helens stewardship area management plan 2013-2022.

England, J. F., Jr., T.A. Cohn, B.A Faber, J. R. Stedinger, W.O. Thomas Jr., A. G. Veilleux, J. E. Kiang, and R. R. Mason. 2019. Guidelines for determining flood flow frequency — Bulletin 17C (ver. 1.1, May 2019): U.S. Geological Survey Techniques and Methods.

Granato G. E., K. G. Ries, and P. A. Steeves. 2017. Compilation of streamflow statistics calculated from daily mean streamflow data collected during water years 1901–2015 for selected U.S. Geological Survey streamgages: U.S. Geological Survey Open-File Report 2017–1108.

Lamperth, J., A. Groskopf, and B. Michaelis. 2017. Lewis River bull trout habitat restoration project identification assessment.

Lower Columbia Fish Recovery Board (LCFRB). 2010. Washington lower Columbia salmon recovery and fish and wildlife subbasin plan. Available: https://www.lcfrb.gen.wa.us/librarysalmonrecovery

Major, J., and L. Mark. 2006. Peak flow responses to landscape disturbances caused by the cataclysmic 1980 eruption of Mount St, Helens, Washington.

Major, J., T. Pierson, and K. Scott. 2005. Debris flows at Mount St. Helens, Washington, USA.

Mastin, M. C., C. P. Konrad, A. G. Veilleux, and A. E. Tecca. 2016. Magnitude, frequency, and trends of floods at gaged and ungaged sites in Washington, based on data through water year 2014 (ver 1.2, November 2017): U.S. Geological Survey Scientific Investigations Report 2016–5118.

PacfiCorp. 2016. Lewis River hydroelectric project (FER Nos 211, 2213, 2071, and 935) new information regarding fish transport into Lake Merwin and Yale Lake – June 2016. PacfiCorp, Portland, Oregon.

Quantum Spatial. 2018. Washington FEMA 3DEP 2018 LiDAR technical data report. Contract No. G16PC00016, Task Order No. 140G0218F00367.

Roni, P. 2020. Lewis River basin implementation monitoring plan for habitat restoration in lieu of fish passage. Prepared for PacfiCorp, Portland, Oregon.

Roni, P., and T. Beechie. 2013. Stream and watershed restoration: a guide for restoring riverine habitat and processes. Wiley Blackwell, Chichester, U.K.

Roni, P., C. Clark, K. Ross, R. Camp, M. Krall, J. Hall, and R. Brown. 2020. Using remote sensing and other techniques to assess and monitor large floodplain and riparian restoration projects. Recreation and Conservation Office, Olympia, Washington.

Roni, P., M. Krall, J. Kvistad, S. Burgess, and K. Ross. 2022. Action effectiveness monitoring program – 2021 annual report. Prepared for BPA, Portland, OR.

Roni, P, and R. Timm. 2016. Lewis River project – limiting factors and identification of restoration alternatives to fish passage. Prepared for PacifiCorp Energy, Portland, OR.

U.S. Forest Service (USFS). 1995a. Middle Lewis River watershed analysis. Gifford Pinchot National Forest.

U.S. Forest Service (USFS). 1995b. Upper Lewis River watershed analysis. Gifford Pinchot National Forest.

U.S. Forest Service (USFS). 1996. Lower Lewis River watershed analysis. Gifford Pinchot National Forest.

# 17 RESUMES

## PHILIP RONI, PH.D.

***Vice President, Principal Scientist***

1125 12th Ave NW, Suite B-1
Issaquah, WA 98027
V 206.612.6560
phil.roni@fishsciences.net

**Years of Experience**

- 32 years. Professional start date: December 1989

**Education**

- Ph.D., Aquatic and Fishery Sciences, University of Washington, 2000.
- M.S., Fisheries Science, University of Washington, 1992.
- B.A., Business Administration (Marketing), University of Washington, 1987.

Dr. Roni has more than 30 years of experience as a fisheries scientist and manages the Northwest science team for Cramer Fish Sciences (CFS). Prior to joining CFS, Dr. Roni led the Watershed Program at the NOAA Northwest Fisheries Science Center where he directed more than 20 scientists conducting habitat research and science to support salmon recovery. Phil focuses on designing, implementing, completing, and publishing definitive studies to address pressing questions related to protection, management, and restoration of aquatic systems and salmon recovery. He has published numerous papers and guidance on restoration and monitoring including the books "Stream and Watershed Restoration: a guide to restoring riverine processes and habitat" (2013 Wiley-Blackwell) and "Monitoring Stream and Watershed Restoration" (2005 American Fisheries Society). Recent research projects include optimal methods for floodplain restoration, comparison of methods for estimating fish capacity and abundance, evaluating the effectiveness of large multi-state habitat restoration programs, new techniques for assessing watershed condition and identifying restoration opportunities, and floodplain restoration design guidance. He received a Presidential Early Career Award (2004) from the US President and a Certificate of Achievement (2012) from the AFS for his contributions to restoration science. Dr. Roni is also an Affiliate Professor at the University of Washington School of Aquatic and Fishery Sciences.

### Employment History

*Vice President/Principal Scientist,* Cramer Fish Sciences, 2015-present.

*Watershed Program Manager/Research Scientist,* Northwest Fisheries Science Center, National Marine Fisheries Service (NMFS), 1995-2015.

*Fisheries Biologist*, Washington Department of Fish and Wildlife, 1994-1995.

*Aquatic Ecologist*, Beak Environmental Consultants, Inc., 1992-1994.

*Research Biologist*, University of Washington and Washington Department of Fisheries, 1991-1992.

*Research Biologist*, Center for Streamside Studies, University of Washington, 1989-1991.

### Additional Professional Experience

Book editor for Stream and Watershed Restoration (2013) (Wiley/Blackwell).

Book editor for Monitoring Stream and Watershed Restoration (2005) (AFS).

### Selected Publications and Reports (12 of >100)

**Roni, P.** 2019. Does river restoration increase fish abundance and survival or simply concentrate fish? The effects of project scale, location, and fish life history. Fisheries 44:7-19.

**Roni, P**., J. E. Hall, S. M. Drenner, and D. Arterburn. 2019. Monitoring the effectiveness of floodplain habitat restoration: A review of methods and recommendations for future monitoring. Wiley Interdisciplinary Reviews: Water 6(4):e1355.

**Roni, P.**, U. Åberg, and C. Weber. 2018. A review of approaches for monitoring the effectiveness of regional river habitat restoration programs. North American Journal of Fisheries Management 38: 1170-1186.

**Roni, P**., P. J. Anders, T. J. Beechie, and D. J. Kaplowe. 2018. Review of tools for identifying, planning, and implementing habitat restoration for Pacific salmon and steelhead. North American Journal of Fisheries Management 38(2):355-376.

**Roni, P.**, Johnson, C., T. DeBoer, T. and G. Pess. 2016. Interannual variability in the effects of physical habitat and parentage on Chinook Salmon egg-to-fry survival. Canadian Journal of Fisheries and Aquatic Sciences 73:1-13.

**Roni, P.**, T. Beechie, G. Pess, and K. Hanson. 2015. Wood placement in river restoration: Fact, fiction and future direction. Canadian Journal of Fisheries and Aquatic Sciences 72(3):466-478.

**Roni, P.**, and T. Beechie. 2013. Stream and Watershed Restoration: a guide to restoring riverine processes and habitats. Wiley-Blackwell, Chichester, U.K.

**Roni, P.**, G. Pess, S. T. Beechie, and S. Morley. 2010. Estimating changes in Coho Salmon and steelhead abundance from watershed restoration: how much restoration is needed to measurably increase smolt production? North American Journal of Fisheries Management 30:1469–1484.

**Roni, P.**, K. Hanson, and T. Beechie. 2008. Global review of physical and biological effectiveness of stream rehabilitation. North American Journal of Fisheries Management 28:856-890. (#1 NAJFM Most Read and Most Cited Paper).

**Roni, P.** 2005. Monitoring stream and watershed restoration. American Fisheries Society, Bethesda, Maryland. 350pp.

**Roni, P.**, K. Hanson, G. Pess, T. Beechie, M. Pollock, and D. Bartley. 2005. Habitat rehabilitation for inland fisheries. Fisheries Technical Paper 484. Food and Agriculture Organization of the United Nations, Rome, Italy.

**Roni, P.**, T. J. Beechie, R. E., Bilby, F. E. Leonetti, M. M. Pollock, and G. P. Pess. 2002. A review of stream restoration techniques and a hierarchical strategy for prioritizing restoration in Pacific Northwest watersheds. North American Journal of Fisheries Management 22:1-20. (#2 NAJFM Most Read and Most Cited Paper).

# REID CAMP, M.S.

## *Senior Fluvial Geomorphologist*

985 Colt Rd
Moscow, ID 83843
V 208.810.4887
reid.camp@fishsciences.net

**Years of Experience**

- 13 years. Professional start date: 2009

**Education**

- M.S., Watershed Sciences, Utah State University. 2014.
- B.S., Fishery Resources, University of Idaho. 2009.

Reid Camp is a fluvial geomorphologist with experience in geomorphic assessments, aquatic habitat surveys, restoration effectiveness monitoring, and restoration planning, design, and implementation. Reid is a leading expert in low-tech process-based restoration planning, design, and implementation, including beaver dam analogs and post assisted log structures. His work focuses on holistic approaches to assessing complex ecosystem questions by studying the interaction of fluvial and biological processes across multiple spatial and temporal scales. He has extensive experience using geographic information systems (GIS) for geomorphic, hydrologic, and riparian analyses and cartography. He has worked on and led multiple geomorphic assessments and salmon restoration projects in the Inland Northwest including the Asotin Creek Geomorphic Assessment and Conceptual Restoration Plan, the Tucannon River Geomorphic Assessment, Asotin Creek Intensively Monitored Watershed, and Rattlesnake Creek Conceptual Rehabilitation Plan, and the Middle Nemah River Assessment and Restoration Plan. Reid received his M.S. in Watershed Sciences with an emphasis in fluvial geomorphology from Utah State University. His thesis evaluated the geomorphic and hydraulic effectiveness of high density large woody debris additions in Asotin Creek using a combination of rapid assessments and high-resolution topography. Reid is also a FileMaker developer and uses the platform to create mobile database apps exclusively for natural resource professionals. His apps are currently being used by government agencies, non-profit organizations, and private companies throughout the U.S. to expedite field data collection and manage complex datasets.

## Employment History

*Senior Fluvial Geomorphologist*, Cramer Fish Sciences, 2021-present.

*Fluvial Geomorphologist*, Cramer Fish Sciences, 2018-2021.

*Owner/Fluvial Geomorphologist*, Sage Environmental Research, 2017-2018.

*Database Steward and Monitoring Coordinator*, Snake River Salmon Recovery Board, 2018.

*Associate Manager*, Anabranch Solutions, 2016-2018.

*Graduate Research Assistant*, Utah State University, 2013-2014.

*Fish Ecologist/Fluvial Geomorphologist*, Eco Logical Research, Inc., 2009-2017.

*Scientific Technician 2*, Washington Department of Fish and Wildlife, 2010-2011.

*Wildlife Technician 2*, Washington State University, 2009.

*Fish Hatchery Technician*, Deakin Aquaculture Facility, 2008.

*Beneficial Use Reconnaissance Program Crew Lead*, Idaho Department of Environmental Quality, 2006-2007.

## Selected Publications and Reports

**Camp R.**, P. Luecking, P. Roni. 2021. Letsinger Habitat Restoration Design Project Preliminary Basis of Design Report. Report prepared by Cramer Fish Sciences for Pacific Conservation District. South Bend, WA.

Clayton S., R. Zabrowski, **R. Camp**, P. Roni. 2021. North Fork Walla Walla River Sam's-Rae Design Conceptual Design Report. Report prepared by Jacobs for Walla Walla Basin Watershed Council. Milton-Freewater, OR.

**Camp R.**, and M. Camp. 2021. Merry Canyon – Chumstick Creek Conceptual Design, Low-Tech Process-Based Restoration. Report prepared by Cramer Fish Sciences for Chelan County Department of Natural Resources. Wenatchee, WA.

**Camp R.**, P. Luecking, P. Roni, L. Dominguez. 2021. Forks Creek Reach-Level Large Wood Design Project Preliminary Basis of Design Report. Report prepared by Cramer Fish Sciences for Pacific Conservation District. South Bend, WA.

**Camp R.**, P. Roni, M. Krall. 2021. Habitat Assessment and Prioritization of Forks Creek Restoration Opportunities. Report prepared by Cramer Fish Sciences for Pacific Conservation District. South Bend, WA.

**Camp R.**, C. Clark, P. Roni. 2020. Middle Nemah River Habitat Assessment and Restoration Design Project, Final Report: Habitat Assessment Results and Identification of Restoration Opportunities. Report prepared by Cramer Fish Sciences for Pacific Conservation District, South Bend, WA.

Roni, P., C. Clark, **R. Camp**, D. Arterburn. 2020. Middle Entiat restoration effectiveness monitoring pilot Project: baseline monitoring of large-scale floodplain restoration project. Report prepared by Cramer Fish Sciences for Bonneville Power Administration.

**Camp, R.**, and co-authors. 2019. Chapters 2, 4, 5, 6, and 7. Pages 59-88 and 146-284 in J. M. Wheaton, S. N. Bennett, N. Bouwes, J. D. Maestas, and S. M. Shahverdian, editors. Low-Tech process-based restoration of riverscapes: design manual. Version 1.0. Utah State University Restoration Consortium. Logan, UT. DOI: 10.13140/RG.2.2.19590.63049/2. Available at: http://lowtechpbr.restoration.usu.edu/manual.

Bennett, S., **R. Camp,** A. Hill, J. Wheaton, N. Bouwes, G. O'Brien, B. Floyd, and T. Drury 2018. Asotin County watershed assessment and conceptual restoration plan. Report prepared for Asotin County Conservation District, Asotin, WA.

**Sage Environmental Research, LLC**. 2018. Rattlesnake Creek conceptual rehabilitation plan. Report prepared for Asotin County Conservation District, Asotin, WA.

Kasprak, A., N. Hough-Snee, T. Beechie, N. Bouwes, G. Brierley, **R. Camp**, K. Fryirs, H. Imaki, M. Jensen, G. O'Brien, D. Rosgen, and J. Wheaton. 2016. The blurred line between form and process: a comparison of stream channel classification frameworks. PLoS ONE 11(3):e0150293.

**Camp, R.**, and J. Wheaton. 2014. Streamlining field data collection with mobile apps. Eos, Transactions, American Geophysical Union 95(49):453–454.

# PHILIP LUECKING, P.E.

***Licensed Professional Civil Engineer***

1125 12th Ave. NW, Suite B-1
Issaquah, WA 98027
V 360.456.4621
pluecking@gmail.com


**Years of Experience**

- 22 years. Professional start date: September 2000

**Education**

- M.S., Civil & Environmental Engineering, University of California, Berkeley. 2000.
- B.S., Civil Engineering, University of Illinois at Urbana-Champaign. 1998.

Mr. Luecking is a licensed professional engineer with over 20 years of experience specializing in water resources engineer, habitat restoration and enhancement design for aquatic ecosystems. Philip has developed numerous designs from the conceptual phase through final design as well as construction documents for multi-disciplinary restoration projects in both urban and natural settings. He was the lead design engineer for several projects focused specifically on improving rearing, spawning, and habitat conditions for salmonid species. Philip's design experience includes channel stabilization and in-stream habitat design, boulder and large wood structures, tidal marsh restoration, biotechnical bank stabilization, culvert design for fish passage, hydraulic flow control structures, and wetland mitigation. Mr. Luecking strives to create system appropriate elements that achieve the project goals by relying on sound geomorphic and process-based approaches that result in a sustainable and cost-effective implementation. He is well versed in hydrodynamic modeling and development of grading plans and construction documents using CAD. He has provided construction support for implementation of channel and floodplain grading, bank stabilization, boulder and large wood structures, in-channel rock placement, and hydraulic control structures. Mr. Luecking is the Engineer of Record for many habitat enhancement projects that have been implemented in California and Washington.

## Employment History

*Licensed Professional Civil Engineer,* Cramer Fish Sciences, 2018-present.

*Independent Consulting Engineer*, 2016-present.

*Managing Associate Engineer,* Environmental Science Associates, 2004-2015.

*Water Resource Engineer,* Stetson Engineers, 2001-2004.

## Licenses

Professional WA Civil Engineer – No. 47223

Professional CA Civil Engineer – No. 66113

## Representative Projects

**Middle Nemah River Assessment and Restoration Design**, Pacific County, WA. 2019-2022. The Phase I design consisted of removing levees along the north bank, reconnecting the channel to three ponds in the floodplain, road decommissioning, and large wood addition covering 1.1 miles. In 2022, we completed Phase II preliminary designs for the second ranked reaches focused on large wood jam additions covering 2.1 miles, expected to be constructed using helicopter placement. The designs for each restoration opportunity were intended to retain and sort out gravels to improve spawning suitability, create pools and provide hydraulic refuge and predation cover for fish, improve floodplain connectivity, and increase habitat suitability for all fish life stages.

**North River Headwaters Habitat Assessment and Restoration Design**, Pacific County, WA. 2020-2021. The project included a preliminary design for enhancements on Redfield Creek, Raimie Creek, and Howard Creek, three streams that form the headwaters of the North River. The designs included wood jam structures at

strategic locations that are expected to produce suitable habitat for salmon spawning and rearing. The design also included site regrading and culvert removal to allow Howard Creek to reoccupy its historic channel.

**Forks Creek Reach-Level Large Wood Design Project**, Pacific County, WA. 2020-2021. This project included a preliminary design of a series of wood structures downstream of a concrete weir planned for removal to trap and sort sediment, leading to channel aggradation and improved salmon habitat. The designed included large wood structures, boulders, or both at strategic locations that are expected to lead to the most sediment retention.

**Dry Creek Habitat Enhancement Project, Phase III,** Sonoma County, CA. 2013-2015. The project included design of 1.5 miles of enhancements on Dry Creek to provide off-channel summer rearing and winter refugia habitat for steelhead and Coho Salmon. The design used 1-D and 2-D hydrodynamic modeling with detailed site grading to create secondary channels, alcoves and backwater features to meet flow depth and velocity criteria critical to survival of juvenile Coho Salmon.

**Merced River at Snelling, Channel and Floodplain Restoration,** Snelling, CA. 2011-2015. The project included development and implementation of over 4,500 feet of in-channel improvements and 9 acres of floodplain habitat to benefit Chinook salmon. The design relied on 2-D hydrodynamic modeling to guide placement of in-channel features Floodplain habitat was created in the dredger tailing excavation areas to provide off-channel rearing habitat.

**Fish Passage Restoration at Roy's Pools,** Marin County, CA. 2013-2015. This design was developed to restore upstream and downstream passage for salmonids through removal of a failed concrete and steel step pool structure and installation of a functional channel bed. The design approach included using a mosaic of roughened channel, step-pool and riffle-pool units to provide hydraulic conditions suitable for year-round passage. The design also included enhancement and creation of off-channel rearing habitat.

# TYLER ROCKHILL, P.E., M.S.

***Restoration Engineer***

1125 12th Ave. NW, Suite B-1
Issaquah, WA 98027
V 206.960.4045
tyler.rockhill@fishsciences.net


**Years of Experience**

- 7 years. Professional start date: 2015

**Education**

- M.S., Hydrology, University of Arizona 2017
- B.S., Civil/Environmental Engineering, University of Portland 2015

Tyler is a Restoration Engineer with extensive experience in water resources and hydraulic engineering in the Pacific Northwest. His experience includes aquatic habitat restoration design, hydraulic and hydrologic modeling, sediment modeling, large wood design, floodplain mapping, geomorphic and habitat assessment, and hydrometric surveying. Tyler's diverse background includes experience at every step of a project from prioritization and planning to site assessment, literature review, data collection and surveying, modeling and design, permitting, and construction. This experience allows for an interdisciplinary, process-based understanding of project delivery. He has experience developing hydrologic and hydraulic models such as HEC-RAS, SRH-2D, River2D, HEC-HMS, HPSF, MGSFlood, HY-8, SWAT, WMS, SWMM, and StormShed. He is an experienced jet boat and raft operator in lakes, rivers, and deltas, including for the purposes of topobathymetric and hydrometric surveys. Tyler has experience working on a broad range of river engineering projects such as culvert replacements, hydraulic and hydrologic modeling, floodplain mapping, and bank erosion/scour protection.

## Employment History

*Restoration Engineer,* Cramer Fish Sciences, Issaquah, WA, 2022-present.

*Water Resources Engineer,* Northwest Hydraulic Consultants, Seattle, WA, 2019-2022.

*Hydraulic and Environmental Engineering Lead,* Washington State Department of Transportation, Seattle, WA, 2018-2019.

*Aquatic Habitat Technician,* Wyoming Department of Game and Fish, Buffalo, WY, 2017.

*Graduate Research Assistant,* Hydrology and Atmospheric Sciences, University of Arizona, Tucson, AZ, 2015-2017.

*Teaching Assistant,* Hydrology and Atmospheric Sciences, University of Arizona, Tucson, AZ, 2015-2016.

*Teaching Assistant,* Civil/Environmental Engineering, University of Portland, Portland, OR, 2015.

*Fisheries Management Intern,* United States Forest Service, Stanley, ID, 2014.

*Water Conservation Intern,* United States Bureau of Reclamation, Durango, CO, 2012.

## Licenses

Professional WA Civil Engineer – No. 21019178

Professional ID Civil Engineer – No. 21279

Professional OR Civil Engineer – No. 090026PE

WSDOT Fish Passage and Stream Restoration Design Training - Certificate # FPT20-07858

## Selected Publications

Camp R., P. Luecking, **T. Rockhill**, P. Roni. 2022. Howard Creek Re-Meander Habitat Restoration Design Project Final Basis of Design Report. Prepared by Cramer Fish Sciences for Pacific Conservation District. South Bend, WA.

Clayton S., R. Zabrowski, R. Camp, **T. Rockhill.**, P. Roni. 2022. North Fork Walla Walla River Sam's-Rae Design Preliminary Basis of Design Report. Prepared by Jacobs for Walla Walla Basin Watershed Council. Milton-Freewater, OR.

Camp R., **T. Rockhill**, P. Roni, D. Gorman. 2022. Middle Nemah River Restoration Design Phase II, Preliminary Basis of Design Report. Prepared by Cramer Fish Sciences for Pacific Conservation District, South Bend, WA.

Leytham M., C. Long, **T. Rockhill**., D. Jones, R. Roberts, A. Dufficy. 2022. Skagit River Relicensing Instream Flow Model Development. Prepared by HDR and Northwest Hydraulic Consultants Inc. for Seattle City Light, Seattle, WA.

Bennett T., **T. Rockhill**, A. Dufficy. 2021. I-5 MP 177.93, 177.85a, and 177.85b McAleer Creek Fish Passage. Preliminary Hydraulic Design Report. Prepared by WEST Consultants and Northwest Hydraulic Consultants Inc. for Washington State Department of Transportation, Olympia, WA.

Bennett T., A. Anderson, **T. Rockhill**, A. Dufficy. 2021. SR 900 MP 19.50 Tibbetts Creek Fish Passage. Preliminary Hydraulic Design Report. Prepared by WEST Consultants and Northwest Hydraulic Consultants Inc. for Washington State Department of Transportation, Olympia, WA.

Collins V., A. Anderson, **T. Rockhill**. 2021. SR 169 Flood Risk Reduction. Final Basis of Design Report. Prepared by Davido Consultant Group and Northwest Hydraulic Consultants Inc. for King County Department of Natural Resources Water and Land Resources Division. Seattle, WA.

Collins V., and **T. Rockhill**. 2021. Oso Landslide Memorial Site Hydraulic Analysis. Prepared by Northwest Hydraulic Consultants Inc. for Snohomish County Parks and Recreation, Everett, WA.

Collins V., J. Payne, **T. Rockhill,** A. Nelson, A. Dufficy, M. Ohrt. 2021. Abbott Levee Habitat Improvement Project: 100% Basis of Design Report. Prepared by Northwest Hydraulic Consultants Inc. for Whatcom County Flood Control Zone District, Bellingham, WA.

Collins T., J. Brown, **T. Rockhill**. 2021. Ferndale Levee Improvement Project Hydrology, Hydraulics, and Geomorphology Existing Conditions Report, prepared by Northwest Hydraulic Consultants Inc. for Whatcom County Flood Control Zone District, Bellingham, WA.

Collins V., M. Leytham, **T. Rockhill**. 2020. Coweeman River Levee Raise Hydrograph Development Memorandum. Prepared by Shannon and Wilson and Northwest Hydraulic Consultants Inc. for Consolidated Diking Improvement District No. 3, Kelso, WA.

Bennett T., **T. Rockhill,** D. Jones. 2020. Maddox Creek/Big Ditch Alternatives Evaluation, Northwest Hydraulic Consultants Inc, prepared for Skagit County Drainage and Irrigation District #17.

# IAN A. SINKS

**Stewardship Director**
**Columbia Land Trust**
850 Officers Row
Vancouver, WA 98661
Cell: 503-799-9505
isinks@columbialandtrust.org


Ian Sinks is the stewardship director for the Columbia Land Trust and has been with the land trust since 1998, first as a volunteer and board member and as staff since 2000. Ian is responsible for overseeing the stewardship program, which manages more than 36,000 acres of habitat conservation lands throughout the lower Columbia River region. His responsibilities include supporting conservation planning, evaluating new conservation sites, preparing management plans, restoring habitat, supporting community engagement and monitoring as part of an adaptive management approach. His work includes restoration of intertidal wetland and riparian habitats, and implementation of habitat focused forestry. Ian currently serves on the Washington Natural Heritage Advisory Council. Before working with Land Trust, Mr. Sinks worked as an environmental consultant and as a Peace Corps volunteer with the Malawi Department of National Parks and Wildlife. He has a Bachelor of Science degree in biology from the Lewis and Clark College and continuing education in watershed and resource management, ecology, and habitat restoration.

**EDUCATION**

- B.S. Biology, 1990. Lewis and Clark College, Portland, Oregon.
- Certificate in Watershed Management (graduate level), 1998. Portland State University, Portland, OR
- Continuing education in ecology, conservation biology, protected areas stewardship, wetland and riparian restoration, environmental regulations.
- U.S. Peace Corps Pre-Service and In-Service training in cross-cultural, language and technical skills (protected areas management, resource conservation, wildlife ecology)

**PROFESSIONAL EXPERIENCE**

**Stewardship Director, Columbia Land Trust, Vancouver, Washington**
August 2000 – Present

- Oversees stewardship program responsible for protecting the conservation values on over 36,000 acres of land. Responsibilities include program and budget development, staff hiring and management, coordination with project partners and contractors, conservation project development, site stewardship and monitoring plan development, implementation of stewardship activities and community outreach.
- Developed program approach, policy and procedures, and other tools for the program to be successful in land stewardship. Worked with staff and board to build the capacity of the program to become one of the most successful programs in the Pacific Northwest.
- Led and supported habitat restoration work on conservation properties including tidal wetland, in-stream habitat, and upland forest restoration throughout the region. Restoration work included the development of comprehensive project effectiveness monitoring plan as part of an adaptive management approach to land stewardship.
- Principle team member on conservation planning processes for the land trust service region covering over 250 miles of the Columbia River defining ecological principles, identifying conservation priorities, and developing conservation and restoration strategies for the Land Trust.
- Prepared and was awarded over $20 million in grant funding from public and private grant sources for habitat protection and restoration projects.

- Presented at regional and national conferences on habitat restoration, conservation planning, and land stewardship. Published project and monitoring findings in technical reports and journals.

**Natural Resource Manager/Senior Ecologist, The JD White Company, Inc., Vancouver, WA**
April 1996 – August 2000

- Natural Resource team manager and principal member of company management staff for a 25-person land use planning, public involvement and environmental consulting firm. Directly responsible for staff hiring, workload management, budget development, business development and strategic planning.
- Responsible for preparation and review of technical studies and documentation for environmental projects including biological assessments, habitat surveys, SEPA and NEPA analysis, resource planning assessments, resource protection plans, wetland evaluations and habitat mitigation projects.
- Project manager for biological assessment studies to evaluate potential project effects on listed species for Endangered Species Act compliance. Studies included the evaluation of over 35 species of fish, wildlife and plants. Responsible for scientific literature research, designing and implementing appropriate survey and assessment protocols, preparation of technical documents, coordination with resource agencies and clients, and defending findings before public and agency members.
- Lead biologist and project manager for numerous wetland habitat studies and mitigation projects including wetland creation/enhancement projects. Project work included mitigation planning, grading and planting designs, analysis of site hydrology, preparation of permit applications, constructions specifications, habitat construction and post-construction monitoring.
- Strong understanding of environmental regulations including ESA, Section 404, NEPA and SEPA, state and local land use regulations, and state water rights.
- Responsible for representing firm and clients, and providing expert testimony, for project interviews, public and judicial hearings, and before regulatory agencies.

**Parks and Wildlife Officer/U.S. Peace Corps Volunteer, Malawi, Africa**
July 1993 – October 1995

- Established Extension Unit for the northern region of the country under the Department of National Parks and Wildlife (DNPW). Developed sustainable resource utilization programs for two protected areas (Vwaza Marsh Wildlife Reserve and Nyika National Park) covering over 4,000 square km.
- Completed public needs assessment and resource abundance surveys. Public surveys evaluated resource requirements, crop protection issues, traditional leadership roles and management practices.
- Responsible for facilitating DNPW interactions with local communities located around protected areas. Worked to resolve antagonistic relations resulting from historical management practices and events. Through this facilitation effort, the DNPW was able to form new relationships and partnerships with local communities and traditional leaders.
- Implemented Participatory Rural Appraisal techniques to establish better understanding of protected areas management issues with local communities.
- Served as a principle resource person on a multidisciplinary team for an $8 million donor funded project to increase resource management capability of the department. Participated in issues analysis and strategic planning for the northern region DNPW units as part of the project.
- Prepared grant applications for funding of small-scale resource projects.
- Facilitated negotiations with local leaders and DNPW staff to realign park boundary and game management fences.
- Developed and implemented technical program for pre-service parks and wildlife training.

**Biologist, Otak, Inc., Lake Oswego, Oregon**
March 1992 – May 1993

- Served as primary biologist conducting wetland delineation, resource surveys, habitat assessments and wetland mitigation plans. Prepared technical documentation for project permit applications and land use reviews.
- Coordinated multidisciplinary teams to prepare project plans including civil and structural engineers, landscape architects, land use planners, hydrologists and geotechnical engineers.

**Environmental Specialist II / Biologist, OMNI Environmental Services, Beaverton, Oregon**
September 1990 – March 1992

- Completed technical studies including wetland assessments, air quality evaluations and hazardous materials assessments. Served as field crew leader for completing studies and data collection. Responsible for establishing field methodologies, project management, literature research and preparation of technical reports.

**Field Research Assistant, Small Mammal Hazardous Waste Site Study, Alkali Lake, OR**
September 1987 – June 1988

- Conducted trap line surveys, data collection and tissue analysis for study evaluating the impacts of a hazardous waste site on small mammal populations in eastern Oregon.

**SELECT PUBLICATIONS**

Sinks, I.A., AB Borde, H.L. Diefenderfer, and J.P. Karnezis. 2021. Assessment of Methods to Control Invasive Reed Canarygrass (*Phalaris arundinacea*) in Tidal Freshwater Wetlands. Natural Areas Journal 41(3):172-185.

Diefenderfer, H.L., I.A. Sinks, S.A. Zimmerman, V.I. Cullinan & A.B. Borde. 2018. Designing topographic heterogeneity for tidal wetland restoration. Ecological Engineering 123:212-225.

Diefenderfer, H.L., A.B. Borde, I.A. Sinks, V.I. Cullinan, and S.A. Zimmerman. 2015. Columbia Estuary Ecosystem Restoration Program: Restoration Design Challenges for Topographic Mounds, Channel Outlets, and Reed Canarygrass. PNNL-24676, report prepared for the Bonneville Power Administration, Portland, OR by the Pacific Northwest National Laboratory, Sequim, WA and Columbia Land Trust, Vancouver, WA.

Diefenderfer H.L., A.M. Coleman, A.B. Borde, and I.A. Sinks. 2008. Hydraulic Geometry and Microtopography of Tidal Freshwater Forested Wetlands and Implications for Restoration, Columbia River, U.S.A. International Journal of Ecohydrology & Hydrobiology 8(2-4):339-361. doi:10.2478/v10104-009-0027-7

# SANOE KELI'INOI

**Natural Area Manager**
**Columbia Land Trust**
850 Officers Row
Vancouver, WA 98661
Cell: 415-24-7141
skeliinoi@columbialandtrust.org

Sanoe Keliinoi is a natural area manager for the Columbia Land Trust, managing two important conservation sites in the lower Columbia River region. Sanoe started as a seasonal monitoring assistant in 2017 and worked through the ranks as an assistant and land steward before her current position with the Land Trust. Sanoe's main responsibilities include stewarding the Cranes' Landing property in the Vancouver lowlands and the Pine Creek East property on the slopes of Mt St Helens. Cranes' Landing is primarily managed for the feeding and loafing habit of sandhill cranes while Pine Creek East, a previously industrial forestland, is managed for the benefit of Bull Trout and marbled murrelet, amongst other ecological values. Sanoe has a particular passion for integrated pest management and participates in the 4-County Cooperative Weed Management Area (CWMA) & Columbia Gorge CWMA. Before working with the Land Trust, Ms. Keliinoi worked in controlling priority invasive species for the county and local public utility. She has a Bachelor of Science degree in environmental science from the University of Portland.

## EDUCATION

**Bachelor of Science, Major: Environmental Science; Minor: Second Education** May 2013 **University of Portland, Portland, OR** GPA: 3.7

President's Scholarship, Barbara Sue Seal Scholarship

*Affiliations:* Alpha Lambda Delta Honor Society, Dean's List

## RELATED EXPERIENCE

**Columbia Land Trust, Vancouver, WA** April 2019-Present *Natural Area Manager, Safety Chair*

- Manage stewardship sites for conservation values and goals, uphold all legal obligations through annual site monitoring and enforcement and conduct focused ecological effectiveness monitoring.
- Perform routine property maintenance including vegetation management, weed control, infrastructure construction and maintenance and habitat enhancement activities.
- Support organizational conservation goals, participate in budgeting, fundraising, communications, outreach and other organization priorities.
- Endorse health & safety program for all staff and manage & maintain equipment

**Clark County Public Works, Vancouver, WA** March 2016-April 2019 *Field Technician*

- Controlled noxious weeds in natural areas and priority habitats in various ecological systems of Clark County, notably the Lower East Fork Lewis River & Vancouver Lake.
- Organized field team and volunteer AmeriCorps crew in various weed control activities.
- Assisted in GIS mapping of Class A noxious weed, False Brome, *(Brachypodium sylvaticum)*, and development of management plan.
- Executed & monitored restoration & mitigation plantings in compliance with WSDOT, Department of Ecology, and partner organization specifications.

**Clark Public Utilities, Vancouver, WA** June 2013- January 2016 *Lead Invasive Species Technician; Restoration Technician*

- Identified and monitored aquatic noxious weeds, specifically knotweed (*Polygonum x).*
- Led surveying efforts and coordination of herbicide treatment with private landowners.
- Supported restoration goals through management of native tree nursery, supervision of contract crews and preliminary planning activities including site preparation and planting layouts.
- Assisted in the organization and implementation of outreach and volunteer activities.

**SPECIAL SKILLS** WSDA Pesticide License- Commercial Operator w/Aquatic & ROW Endorsements; First Aid & AED Certification Expires 9/2024 FAA Drone Pilot

# 18 QUESTION RESPONSE MATRIX

## Pine Creek Restoration Design Project

| Representative | Question | Response |
|---|---|---|
| WDFW | Please provide a ball-park estimate for the cost (range) to construct potential elements in this proposal such as cost range for log jams, potential number of log jams, helicopter, etc. A more refined cost estimate with be provided with the final deliverable. | The purpose of the assessment and conceptual design portion of this proposal is to determine the appropriate reaches, methodology or type of restoration action, and to develop a tiered ranking for actions. Once we have completed this portion, we will take these through to final design. Providing a cost estimate prior to these work products is difficult. Nevertheless, we provide approximate cost estimates below for priority reaches, assuming primarily helicopter-placed wood:<br><br>Pine Creek 1 – $250,000 - $1.25 million (not likely to be implemented for private land parcels, therefore likely on lower end of estimate)<br>Pine Creek 2 - $115,000 – $650,000 (focus Tier 2 reach)<br>Pine Creek 3 - $150,000 – $800,000 (Tier 4 reach)<br>Pine Creek 4 - $150,000 – $800,000 (focus Tier 2 reach)<br>Pine Creek 5 - $150,000 – $800,000 (Tier 2 reach)<br>Pine Creek 6 - $550,000 – $1.75 million (Tier 2 reach)<br><br>These estimates are based on a cost of $150,000 to $800,000 per river mile. These are approximate estimates only and detailed estimates will be provided at each phase of the design process. These assume that the entire reach will receive wood placement, and it is likely only specific sections of each reach will receive wood placement which should reduce the cost. In addition, we expect restoration to focus on reaches 1, 2, 4, and 5 with only a small part of reach 1 that is on public lands.<br><br>Comment addressed with additional information in Section:<br>**Section 13.2 Budget Assumptions**<br>It is anticipated that the upper portion of reach 1 (~0.62 mi), reach 2 (~0.75 mi), reach 4 (~0.8 mi), and reach 5 (~1.86 mi) will be the priority reaches for design (~4 river miles total). Construction cost for these priority reaches could range from $150,000 to $800,000 per river mile or $600,000 to $3.2 |

| | | |
|---|---|---|
| | | million for all 4 miles). It should be noted that this assumes the entirety of each reach will be treated and that all reaches will be treated, which is unlikely. Thus, costs are likely to be lower and these estimates were provided to give ballpark estimates as requested by the ACC. |
| WDFW | Will design(s) provided as a deliverable be specific to a site or a general design that will be applied to appropriate areas? | The design(s) will consist of site-specific engineering documents rather than a general design. We believe that a site-specific design will be beneficial in developing an ecologically successful project.<br><br>Comment addressed with additional information in Section:<br>***Subtask 2.2 Draft construction plan – 30% design***<br>The drawings will contain explicit type, size, and location information for design elements, separated by reach. |
| WDFW | Will this proposal remain as an Aquatics Fund proposal of will this be a Bull Trout fund proposal? | Comment addressed with additional information in Section:<br>***2 Requested Funding Amount and Source***<br>This project is primarily focused on Bull Trout; however, it will also consider and benefit steelhead, spring Chinook, and Coho Salmon. Therefore, we arerequesting consideration for both the Bull Trout Project fund for this design work (this proposal) and the Resource Project fund for any future construction work (not included in this proposal). |
| WDFW | Task 2.1 Please explain the intent to develop a conceptual design including up to three (3) alternatives and/or a priority tiered instream habitat and riparian approach. Will there be multiple conceptual designs prepared for implementation throughout Pine Creek and only 3 taken to 100% design?<br>Does proposed conceptual alternatives mean multiple options to address limiting factors at a given site (choices)?<br><br>This was addressed during the question section of the presentation but please address it in the proposal as well. It may not be necessary to provide/evaluate alternatives similar to an EIS for design work funded through the Aquatics Fund (no restoration). Options for different levels of restoration would be good such as a phased approached. Please consider identifying areas (units, zones, reaches) that are appropriate for restoration and the recommended restoration activity for that area. | First, a preferred alternative from the three alternatives will be selected and taken to final design.<br><br>Second, yes, the three alternatives provide different options to address limiting factors.<br><br>While we will provide three alternatives and one final design, it will be broken down by reaches which will allow a phased approach for construction.<br><br>This was partially described in sections 2.1 and 2.2, but we added additional text to these sections to clarify and address the reviewers' comments. |

| | | |
|---|---|---|
| WDFW | Please clarify the permitting deliverable so that it is consistent throughout the proposal. It appears in some areas that you will be submitting applications as a deliverable. In other areas it appears that you will provide application materials that will be submitted at a later date. Aquatic Funds for implementation/construction of this project is not guaranteed and submitting permits under this proposal seems premature without securing some sort of funding.<br>• Subtask 2.3 Environmental compliance and permitting "As the preliminary designs are being developed, we will begin developing the permit applications. The permitting process will begin by submitting a Joint Aquatic Resources Permit Application (JARPA) to relevant local, state, and federal agencies for review." (page 8) and 11 PERMITS AND AUTHORIZATIONS (page 12)<br>• Subtask 2.4 Final construction plan - 100% design "…information to facilitate permitting…" (page 9)<br>• Task 2.3: Permit ready designs – 60-80% design: Submittal of completed permit applications (page 10)<br>• Task/Deliverable table: Task 2.3: Permit ready designs – 60-80% design - "Submit permits" (page 11)<br>• Task/Deliverable table: Task 2.4: Final construction plan – 100% design – "Permits approved" (page 11)<br>WDFW appreciates that you will "contact regulatory agencies early within a project's timeline to get them involved and help identify potential hurdles or constraints." WDFW encourages their permit writers to meet and help identify project constraints before permits are submitted. This will allow you to wait to submit the HPA permit application until funds for construction have been awarded. | See below comment for additional context.<br><br>The proposal intends to engage regulatory agencies early and often throughout the design as though the project was funded through construction. We believe that engagement of regulatory agencies throughout the design process is crucial for a successful project. If construction funding is awarded, we would like to be prepared to submit permit applications and go to construction. However, if funding for construction is not available permits will be progressed 95% to allow for modification before construction. An amendment or additional contract would be required to bring the design from 95% to 100%, which would include submission of final permit applications and potential construction oversight.<br><br>Comment addressed with additional information in Sections:<br>***Subtask 2.3 Environmental compliance and permitting***<br>All regulatory information needed to facilitate environmental compliance and permitting will be provided by CFS with assistance from CLT.<br><br>***Subtask 2.4 Final construction plan – 95 - 100% design***<br>Comments on the 80% design plans will be incorporated into the 95 - 100% design final construction plan design report and plan sheets. If construction funding is secured, the project will be progressed to 100% final design. If construction funding is not anticipated, the design will be progressed to 95% to allow for modification prior to beginning the bid process. |
| WDFW | Do you have other potential funding sources for construction? | Construction funding solicitation is not included in this proposal. We assume that some of the funding for construction will come from the Aquatics Fund in a future funding round.<br><br>Comment addressed with additional information in Sections:<br>**13.2 BUDGET ASSUMPTIONS** |

| | | |
|---|---|---|
| | | It is anticipated that the most likely construction funding source would be the Lewis River Aquatic Resource Project Fund. |
| WDFW | To maintain consistency throughout the proposal for monitoring:<br>Please add to 8.3 TASK 3: MONITORING AND PHOTO DOCUMENTATION that a monitoring plan will be developed and pre-project conditions provided for consistency.<br>"…we will provide photo documentation of habitat conditions at the project site before, during, and after project completion. We will include general views and close-ups showing details of the project and project area, including pre- and post-construction." (page 9)<br><br>9 SPECIFIC WORK PRODUCTS Task 3: Monitoring and photo documentation does not include development of a monitoring plan but does include pre-construction data collection and photos (page 10) however development of a monitoring plan is identified in the Task/Deliverable table (page 12). | A monitoring plan will be developed as part of this scope and budget.<br><br>Comment addressed with additional information in Sections:<br>**9 SPECIFIC WORK PRODUCTS**<br>***Task 3: Monitoring and photo documentation:***<br>• Effectiveness monitoring plan<br><br>**9 SPECIFIC WORK PRODUCTS**<br>As part of this contract, we will complete the pre-construction photo documentation. During and after photo documentation will be conducted when the project is implemented, and therefore, will be part of another contract. |
| WDFW | There are a lot of assumption for budgeting. "Cramer Fish Sciences will work with PacifiCorp to meet all project objectives on schedule and on budget" yet there's acknowledgement for budgeted on a per-task basis. Will you stay within the requested amount or does this allow for overruns? | The requested amount is anticipated to be sufficient for the work products specified in the proposal, so long as assumptions are valid. Similar to any time and materials contract, items that invalidate assumptions may require amendments to the contract budgeted on a per-task basis. |
| WDFW | "…however, that will be at the discretion of the Corps representative." Please be aware that the Corps is not a signatory to the Settlement Agreement and does not have a "representative" on the ACC. | Thank you for the clarification. |
| WDFW | Proposal mentions "previous work by the USFS in Reach 2 were not entirely successful". How would this prior work be incorporated or considered in the new designs? | First, the previous work used some older wood placement techniques that were likely not appropriate for the reach in question. We will review the previous design documents and re-visit the prior restoration site to learn from the actions and associated responses to incorporate lessons into our designs. Most notably, the size, type, and location of the wood placement will be noted. |
| PacifiCorp | Figure 1 (maybe use a pattern identifier rather than color – not clear with grayscale Also would be helpful to identify the reach locations by number in Figure 1 or elsewhere. | We added an additional figure with ownership and reaches and updated previous figure. |

| | | |
|---|---|---|
| PacifiCorp | Page 3 – The plan states that the type of wood placement will be determined by the assessment and analysis. Given the gradient and energy of Pine Creek the analysis may recommend wood placement that may not be practical (in size and number of wood). Or on the other hand, so large that Pine Creek alters course (path of least resistance) rendering the structures ineffective. This is question, but recommend the proposal address how to mitigate this risk. | Our assessment and analysis will focus on identifying locations of appropriate wood placement so that it leads to morphological and habitat benefits. In addition, wood placement risk, from a project ecological success perspective as well as infrastructure/property perspective will be assessed in each design phase. Hydraulic modeling, stability calculations, and risk assessments will be used to assess project risk and effectiveness. We expect that this design will lean towards resiliency over stability. In other words, we intend to create a design that doesn't shy away from the possibility of the river changing its course or leaving wood high and dry. Natural, intact fluvial systems surrounded by forests can maintain wood densities at a level that the river can process, and we intend to use similar systems as an analog to determine adequate wood loading targets, locations, and spacing.<br><br>Comment addressed with additional information in Section:<br>***Subtask 1.5 Hydraulic analysis***<br>We will develop a 1D hydraulic model to assess hydraulic characteristics, analyze existing and proposed conditions, support the geomorphic assessment, and analyze project risks….The hydraulic model will include a specific assessment analyzing the influence of post-eruption conditions including a risk assessment of debris flows and incorporation of watershed conditions trajectory on hydraulic conditions. … Model outputs are critical to understanding flood risks, floodplain activation, watershed processes, bank stability, sediment mobilization, wood stability analyses, and determining appropriate wood size, number, and location. . |
| PacifiCorp | The proposal already identifies reaches 1,2 and 4 as having priority. Would it be more cost efficient (and practical) to just focus the assessment on these identified reaches as opposed to assessing all reaches 1-6? | Successful restoration projects need to consider the conditions upstream and downstream of the restoration reaches in order to understand watershed process, hydrologic and hydraulic conditions, infrastructure risk, and many other design components. The nature and success of this project relies on a holistic watershed-based approach. |
| PacifiCorp | It is not clear if the project is completely within the ownership of the Columbia Land Trust (map would be helpful) | Figure added for clarity.<br><br>Comment addressed with additional information in Section:<br>**6 PROJECT OBJECTIVES**<br>We anticipate that we will focus habitat improvements on reaches 1, 2, 4, and 5 of Pine Creek and potentially other reaches or tributaries with |

| | | |
|---|---|---|
| | | relatively low spawner density and simplified habitat on Columbia Land Trust and US Forest Service lands." |
| PacifiCorp | Pine Creek when compared to other streams (e.g., Muddy) has relatively low salmon redd counts with nearly all redds identified in lower energy areas along the stream margins and especially in tributaries (which is also where spawning substrate is available). The assessment (as a deliverable) should include (if not already identified) any reach specific limiting factors as justification for the selection of wood placement locations. NOTE – this may already be the intent in your proposal and was missed during our review. | That is correct, that is the intent of the baseline assessment. We indicated this in sub-task 1.3. We clarified that this will be done by individual reach.<br><br>We clarified that this will be done be individual reach with additional information in Section:<br>***Subtask 1.3 Geomorphic and riparian assessment***<br>"The assessment will also include a synthesis of historic changes, geomorphic trajectory, **limiting or driving factors**, and project implications by reach."<br><br>In addition, we modified text in key places to make it clear that we will be identifying and addressing key limiting factors. |
| PacifiCorp | Please include resumes of the team in your final proposal to help the ACC review and score qualifications of the team. | Resumes added to final proposal |

# Landowner Acknowledgement Form

## Landowner Information

☒ Mr. ☐ Ms. Title: Stewardship Director

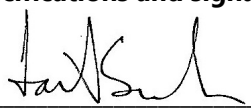
First Name: Ian Last Name: Sinks

Contact Mailing Address: 850 Officers Row, Vancouver WA 98661

Contact E-Mail Address: isinks@columbialandtrust.org

Property Address or Location: Pine Creek watershed - Between Forest Road 60 and 8320

I certify that Columbia Land Trust *(Landowner or Organization)* is the legal owner of property described in this grant application to the Lewis River Aquatic Fund. I am aware the project is being proposed on my property or access across my property is needed. **My signature authorizes the applicant listed below to seek funding for project implementation, however, it does not represent authorization of project implementation pending my final approval of plans and specifications and signature on a formal landowner access agreement.**



Landowner Signature

10/20/2022

Date

## Project Applicant Information

Project Name: Pine Creek Restoration Design Project

Project Applicant Contact Information:

☑ Mr. ☐ Ms. Title: Vice President/Principal Scientist

First Name: Phil Last Name: Roni

Mailing Address: 1125 12th Ave. NW, Suite B-1, Issaquah, WA 98027

E-Mail Address: phil.roni@fishsciences.net

Lead Entity Organization: PacifiCorp and Cowlitz PUD

## Landowner Agreements

Landowner agreements are required for restoration projects on land that the sponsor does not own. Provide PacifiCorp with a signed landowner agreement with your Lewis River Aquatic Fund Application.

The agreement is a document between the sponsor and the landowner that, at a minimum, allows access to the site by the sponsor and Lead Entity Organization staff for project implementation, inspection, maintenance, and monitoring; clearly states that the landowner will not intentionally compromise the integrity of the project; and clearly describes and assigns all project monitoring and maintenance responsibilities.

The landowner agreement remains in effect for a minimum of 10 years from the date of project completion. The date of project completion is the date indicated in the sponsor's fund application. It is the sponsor's responsibility to inform the landowner of this date.

# ATTACHMENT A
## ACC COMMENT & SCORING

## Combined Overall Averaged Scores

| Project Number | Project Name | PRIORITY OBJECTIVES GO or NO-GO 1 | 2 | 3 | 4 | 5 | Benefits to Fish (35%) Q1 | Q2 | Q3 | Scientific Validity (30%) Q4 | Q5 | Q6 | Feasibiltiy (20%) Q7 | Q8 | Q9 | Q10 | Cost Effectiveness (15%) Q11 | Q12 | Q13 | Q14 | Project of Concern? | TOTAL PROJECT Score | Rank |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Scores (use only whole numbers, 0 - 10 with 10 being best) | | | | | | | | | | | | | | | | | | | | | |
| 2022-01 | Pine Creek Restoration Design | GO | GO | GO | GO | GO | 7 | 8 | 9 | 9 | 9 | 9 | 6 | 7 | 9 | 8 | 3 | 8 | 6 | 6 | | 78.3 | 2 |
| 2022-02 | Clear and Clearwater Restoration Implementation | GO | GO | GO | GO | GO | 8 | 9 | 8 | 8 | 8 | 9 | 8 | 9 | 9 | 9 | 9 | 8 | 7 | 8 | X | 83.0 | 1 |

X Utilities, USFWS, WDFW (see comments tab)

## ACC Comments

| Organization | Pine Creek Restoration Design | Clear and Clearwater Restoration Implementation |
|---|---|---|
| Utilities | Design only project that focuses on identifying areas in Pine Creek for habitat enhancement that would benefit both steelhead and bull trout. Design only projects are more difficult to rate as they depend on future work to see tangible benefits. This work is likely to see future value and it complements design work done by the USFS on Clear and Clearwater. Costs seem reasonable. Pine Creek has not received the aquatic funds focus that other areas have despite being the primary spawning tributary for bull trout. Pine Creek does have risks in that it is a high energy stream and the channel remains dynamic. Both steelhead and coho redds have been observed in Pine and to a lesser extent spring Chinook. The Utilities support this proposal moving forward. | Costs for both options are high given the funding amount available and anticipated benefits. Clear Creek habitat quality upstream of the bridge is excellent based on existing wood, spawning substrates, redd surveys and personal communication with carcass surveyor Jason Shappart. The Utilities do not see sufficient value of habitat work upstream of the bridge, and recommend that habitat work in Clear Creek be limited to downstream of bridge to mouth (to improve both juvenile rearing and migration survival). |
| CIT | | Note: We support funding the full proposal. |
| LCFRB | We encourage funding for the Pine Creek project to come from the dedicated Bull Trout Habitat Fund. This proposal is design only, culminating with a 95%- 100% final design package, including permitting. This proposal will develop a design that covers four miles of stream habitat, much of which is now owned by the Columbia Land Trust (CLT), thus helping to ensure project coordination and stream access. The project team is very well qualified, methods are technically sound, and the proposed stepwise design process is robust. Project cost, at $214,236, seems reasonable, and the project team is strong. Design only proposals tend to be the preferred ("safer") approach for large-scale projects, resulting in a more rigorous alternatives development and analysis. As such, comments on this proposal are relatively minimal. Consider funding through the bull trout fund, or via future allocations to the ACC fund. | The USFS plans to conduct work on Clearwater Creek and Clear Creek, totaling 13.9 miles of stream restoration. This is a large scope of work, and scope and cost are in line with recently funded and approved large-scale projects in our region. Consider the strategies in the Coweeman, South Fork Toutle, and the Grays River - all of these subbasins have received significant funding for multiple projects, covering multiple reaches. Also consider the USFS strategies (Watershed Restoration Action Plans [WRAPs]) in our region- Dry Creek (Wind River) and Cispus River. While this project would liquidate much of the current account, we support full funding to ensure the broad-scale and multi-species benefits are realized as soon as possible. It is also far more efficient and cost effective than phasing implementation, given ongoing cost increases and costs associated with re-mobilization. With this in mind, we prefer Alternative 1 for full project funding for the Clear and Clearwater Implementation proposal, provided that in the event that permitting agencies require additional project information, or if the USFS alters the design, we request these changes be presented to the ACC for review prior to construction. We also recommend that the ACC approve full funding from the Bull Trout Habitat Fund for the "Pine Creek Restoration Design Project". |
| USFWS | | Project of concern given the overall cost and past level of success |
| WDFW | | project of concern based on cost and the current balance of the AF |